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A Weekly Journal of Pharmacy and the Drug-trade.

ESTABLISHED 1859.

Head Office: 42 Cannon Street, London, E.C.

Telegraphic Address: "Chemicus London."
Telephone No.: 852 Bank.

Branch Offices: ADELAIDE, MELBOURNE, AND SYDNEY,
AUSTRALIA.

SUBSCRIPTION RATES.

Ten shillings a year in advance, post free to any part of the world, including a copy of *The Chemists' and Druggists' Diary*, next published. Single copy, 4d.; Summer or Winter Number, 1s.; *Diary*, 3s. 6d. Postal orders and cheques to be crossed "Martin's Bank (Limited)."

As an Official Organ

THE CHEMIST AND DRUGGIST is supplied by subscription to the whole of the members of EIGHTEEN CHEMISTS' SOCIETIES in the British Empire, including Ireland, Australia, New Zealand, South Africa, and the West Indies. Besides, its paid subscription circulation at home and to all parts of the civilised world is intrinsically and numerically unique.

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The Chemists' and Druggists' Diary, 1906. Preliminary Notice.

THE preparation of this work has already commenced, and advertisers who wish to avail themselves of the opportunity of making their announcements in the new volume should make sure of getting space by addressing the Publisher of THE CHEMISTS' AND DRUGGISTS' DIARY, 42 Cannon Street, London, E.C.

THE DIARY is presented free to all subscribers to THE CHEMIST AND DRUGGIST, and being in daily use by thousands of our readers throughout the year is the most esteemed and valuable advertising-medium of the kind in the world. Remember that with our unique foreign and colonial circulation it is necessary to go to press at an early date, so that the DIARY may be delivered to subscribers abroad before Christmas.

Summary.

The subjoined paragraphs give the gist of the more important matters in this issue, with the object of showing at a glance what has happened during the week. See also "Contents" in the first column.

THE recent changes in store-prices are given on p. 277.

THE BENEDICTINE TRADE-MARK CASE has been satisfactorily settled (p. 284).

A PORTRAIT GROUP of the first Transvaal Pharmacy Board is given on p. 321.

AN abstract of the will of the late Mr. John Lloyd Bullock is given on p. 286.

THIS WEEK'S ASSOCIATION BALLAD concerns the Thames Valley Association (p. 286).

AN outline of an education scheme for pharmaceutical students is given on p. 322.

THE FEDERATION needs to be more fully appreciated, is the opinion which "Xrayser" expresses on p. 287.

THE WINNER OF THE FAIRCHILD SCHOLARSHIP and four of the prize-winners are pictorially represented on p. 318.

THE SUPPLY OF OPIUM in Burma and Tibet has formed the subject of questions in the House of Commons (p. 319).

OUR SPECIAL CORRESPONDENT begins a series of articles on the British Association meeting in South Africa (p. 291).

A FEW NOTES on some of the members of the Paris Municipal Council who are visiting London will be found on p. 280.

A FIRM OF CHEMISTS at Cape Town have been sued for damages owing to the death of some pigeons. The case was dismissed (p. 320).

COOK'S SHINING DISC COMPETITION does not come under the designation of "lottery," according to the decision of the West Ham Magistrate (p. 277).

"WATER OF MAGNANIMITY" is an old-time galenical the origin of which has been investigated by "Xrayser." A formula is given on p. 287.

SEVERAL experiences and opinions on apprenticeship are contributed to this issue (p. 316), and one student tells his method of home study (p. 317).

AN UNREGISTERED DENTIST has been called upon to pay one of his patients 125l. damages for personal injuries incurred through having teeth extracted (p. 284).

SHIPPERS OF POISONS to the Straits Settlement should note that the outside of the package should be labelled "Poison" to conform with the new Poisons Ordinance (p. 321).

AN account of the visit of the members of the British Pharmaceutical Conference who went to Paris is given on p. 281, whilst a portrait group of the party appears on p. 282.

ENDEAVOURS are being made to amend the Transvaal Pharmacy Ordinance in the light of certain defects which have become apparent since the Ordinance was gazetted (p. 290).

THE PROPRIETORS OF "PLASMON" have succeeded in obtaining an interim injunction against the use of the name "Plasmonade" by a company that proposed to deal in food-stuffs (p. 284).

MR. LOUGH, M.P., asked a question in the House of Commons in regard to the disabilities under which women are placed by not being able to take Oxford or Cambridge degrees (p. 319).

THE INTERNATIONAL SITUATION in Australian markets is highly satisfactory for Great Britain. This is the conclusion we have come to from an examination of Australia's trade returns for 1904 (p. 289).

THE SOUTH METROPOLITAN GAS CO. have bought property in the Carolinas upon which monazite sand is found. By this means the company hope to get out of the clutches of the present thorium monopolists (p. 285).

THE holiday spirit tends to keep the drug and chemical markets on the quiet side, and few changes have occurred. Opium, cannabis indica, and areca are dearer. Refined camphor, carbolic acid, and quicksilver tend easier (p. 323).

THIS is our annual Educational Number. Information is given on pp. 292 to 318 regarding pharmaceutical, medical, dental, veterinary, and scientific education and qualifications. A complete index of this section will be found on p. 292. We summarise the chief changes in educational arrangements during the past year on p. 288.

Corner for Students.

CONDUCTED BY LEONARD DOBBIN, Ph.D.

Students, please note. All communications should be addressed to the Editor of "The Chemist and Druggist," 42 Cannon Street, London, E.C.

Stereochemistry.

By W. W. TAYLOR, M.A., D.Sc.

The Resolution of Racemic Compounds into the Active Isomers.

HAVING seen how the inactive modification is obtained, we shall next consider the possibility of obtaining the dextro- and lævo- modifications from it. Owing to the identity of the two isomers in all chemical properties, and in physical properties with the exception of the action on polarised light, the ordinary methods of separation employed in analytical chemistry, which depend on differences of chemical or physical properties such as differences of solubility, volatility, union with acids or bases, etc., are inapplicable. There are, generally speaking, three distinct methods of separation, all of them known to and successfully employed by Pasteur in his historic investigations on the tartrates and racemates. They are:

1. Separation by means of organisms, especially of micro-organisms—bacteria, etc.
2. Separation by spontaneous formation of enantiomorph crystals which can be picked out.
3. Separation by means of other optically active compounds.

I. Separation by means of organisms.

When certain micro-organisms are cultivated in a solution of a racemic compound or mixture, one of the active modifications is consumed and the other left untouched, or the one is consumed before the other. For example, *Penicillium glaucum* destroys the *l* modifications of lactic acid and of primary amyl alcohol, $\text{CH}_3\cdot\text{C}_2\text{H}_5\cdot\text{H}\cdot\text{CH}_2\text{OH}$, leaving the *d* modifications; while it destroys the *d* modifications of tartaric acid and of secondary amyl alcohol, $\text{CH}_3\cdot\text{CHOH}\cdot\text{C}_2\text{H}_5$, leaving the *l* modifications. In these cases only one active isomer is obtained, but both may be prepared by this method, since one organism may leave the one, and a different organism may leave the other—e.g., *d* mandelic acid is left by the action of *Penicillium glaucum* on *i* mandelic acid $\text{C}_6\text{H}_5\cdot\text{CHOH}\cdot\text{COOH}$, while the action of *Saccharomyces ellipsoideus* gives *l* mandelic acid. The organism which leaves *l* lactic acid has already been referred to.

A disadvantage of the method is that half the substance is lost, and its applicability is restricted by the fact that many substances exert an injurious influence upon the organisms.

There are no means of deciding whether the great number of optically active substances found in animals and plants, such as the sugars and the alkaloids, have resulted by the destruction of the other active isomer in a manner comparable to that just described, or whether they are direct synthetic products.

II. Separation by spontaneous formation of enantiomorph crystals.

This method is not of wide applicability. If a solution of sodium ammonium racemate (*i* tartrate) be crystallised at ordinary temperatures the *d* and *l* salts crystallise separately, and can be distinguished by their asymmetric crystal faces, while, at higher temperatures, crystals of racemate separate out. This is, undoubtedly, a characteristic phenomenon, but there are difficulties in using it as a practical method. There is a temperature limit on one side of which the racemic compound is stable, the *d* and *l* mixture being stable on the other side—e.g., below 28°C . the mixture of *d* and *l*

sodium ammonium tartrate is stable, but above it sodium ammonium racemate is the stable form. In many cases this "transition temperature" is not known—e.g., *i* asparagin, $\text{COOH}\cdot\text{HNH}_2\cdot\text{CONH}_2$ always crystallises as a *d* and *l* mixture, and racemic acid does not crystallise as a *d* and *l* mixture. A further difficulty is that the substance may not form well-defined crystals, so that it is impossible to pick out the two forms.

A modification of this method, which avoids this difficulty, has been used in the resolution of lactic acid. A solution of zinc ammonium *i* lactate is concentrated until it is much supersaturated, and a small crystal of the *d* lactate is added; the *d* lactate alone crystallises, and the *l* lactate is recovered from the solution.

III. Separation by means of optically-active compounds.

Reference has already been made to the identity of solubility of the corresponding derivatives of *d* and *l* isomers, but this disappears if the other substance from which the compounds are derived is itself already optically active. The reason for this is that the one compound is no longer the mirror image of the other. Thus the alkaloid strychnine is optically active and only the *l* isomer is known; it forms a salt *l* strychnine *l* lactate, which has certain properties, solubility, etc.; the enantiomorph compound would be *d* strychnine *d* lactate, which would possess identical solubility, etc., but the salt actually made is *l* strychnine *d* lactate, and this has a different solubility. Thus it is possible to separate the two strychnine salts by fractional crystallisation. In the above example the *l* lactate is the less soluble, and crystallises first, the *d* lactate being obtained from the last crystallisations. After repeated crystallisation the two salts can be obtained pure.

The alkaloids generally used are cinchonine, cinchonidine, quinine, strychnine, brucine, and morphine. Similarly *i* bases, such as synthetic conine and propylendiamine, $\text{CH}_3\cdot\text{CHNH}_2\cdot\text{CH}_2\text{NH}_2$, can be resolved into the *d* and *l* isomers by means of optically active acids—e.g., *d* tartaric acid, camphor-sulphonic acid.

Experiment alone will show what alkaloid or acid will afford a convenient separation in any particular case, for there is no apparent connection between amount of specific rotation and difference of solubility. This method affords scope for extensions, since not only differences of solubility, but other differences, as of rate of esterification of an active alcohol with a *d* and *l* acid, can be made use of to effect separations.

Note to Students.—This series of articles will continue until the end of September, when a set of problems and questions will be submitted for reply by students. Prizes will then be awarded for the best papers sent in.—THE EDITOR.

English News.

Local newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

Brevities.

The Devereux trial is reported to have cost not less than 4,000*l.*, and most probably nearer 5,000*l.*

The Salford Town Council have accepted the tender of Mr. J. N. Stephenson for the supply of druggists' sundries.

At Hull on August 8, William Lowson Loten, chemist and druggist, Myton Gate, Hull, was fined 40*s.* and costs for exhibiting indecent advertisements in his window.

The house at 14 Hertford Street, Park Lane, W., in which Edward Jenner, the originator of vaccination, resided in 1803, has now been indicated by a memorial tablet.

The Dudley Board of Guardians have accepted the tender of Messrs. Jakeman & Round, of Dudley, for the supply of surgical fittings for the new workhouse infirmary.

An hotel fire at Burnley, involving the death of a still-room-maid, was caused by the ignition of a mixture of beeswax and turpentine, which was being heated to make furniture-polish.

Mr. G. A. Hurst, F.C.S., of Salford, has been engaged by the Metropolitan Asylums Board to deal with the analysis of lubricating-oils, petroleum, paints, colours, etc., supplied to the Board.

At Thames Police Court on August 3, Barnett Cornblatt was ordered to pay a penalty of 122*l.*, or, in default, two months' imprisonment, for being concerned in smuggling 976 oz. of saccharin (see *C. & D.*, August 5, p. 244).

A correspondent informs us that the man Harvey who was fined at Worship Street Police Court for insobriety last week (*C. & D.*, August 8, p. 244) is not a chemist's assistant, but is a medical man in practice.

Mr. Frank Woollings, chemist and druggist, of Sandown, Isle of Wight, has during the past year raised 4*l.* for the Isle of Wight County Hospital by means of pennies paid by customers using a weighing-machine at his shop.

Mr. J. W. Arden, chemist and druggist, and Mr. J. J. Phillips, chemist and druggist, have been appointed to represent the chemists on the committee of the newly formed Tradesmen's Association at Ashton-under-Lyne.

At Barnard Castle Police Court on August 9, two men were each fined 5*l.* and costs or two months' imprisonment for destroying fish in the Percy Beck with chloride of lime. A local chemist proved the sale of the poison to one of the defendants.

At Horncastle last week, Mr. Joseph Collins, chemist and druggist, of Woodhall Spa, was summoned for neglecting to have his child vaccinated. The Bench made an order for the operation to be performed in a month, and for the payment of 8*s.* 1*d.* costs.

Analysts' Reports.

The public analyst of Stepney in his annual report just issued states that during the twelve months he examined, under the Sale of Food and Drugs Acts, seven samples of camphorated oil, five of cream of tartar, two of cod-liver oil, one of milk of sulphur, and one of sweet spirit of nitre. The following were adulterated: 1 camphorated oil, 90 per cent. deficient in camphor (vendor cautioned); 1 cream of tartar, 20 per cent. lime salts (vendor cautioned); 1 sweet spirit of nitre, 70 per cent. deficient in nitrous ether (vendor summoned, but summons dismissed owing to informality).

Dr. R. Dudfield, medical officer of health of Paddington, in his last annual report, just issued, commenting on the manufacture of "brandy," so-called, from "silent" spirit, says:—

Silent spirit is not of a character which commends itself to the medical profession as a harmless drink. Indeed, it usually contains a considerable portion of furfural, which is distinctly poisonous in its action. The intoxication resulting from excessive consumption of spirits adulterated with "silent" spirit is marked with greater nervous disturbance is more injurious to the system than that due to alcohol derived from (what may be described as) natural sources.

No Lottery.

At West Ham Police Court on August 9, Messrs. Edward Cook & Co., Ltd., soapmakers, Bow, E., were summoned for "unlawfully and knowingly suffering to be exercised a certain lottery, to wit, Cook's Shining Disc Competition, contrary to Sec. 2 of 42 George III., cap. 119." Mr. Wontner, for the police, said defendants had been and were placing in some of the packets containing their "Lightning" soap a disc, and were advertising a "Shining Disc Competition." In consequence of complaints received, Detective Eustace saw Mr. Alexander Cook, who drew attention to the fact that people forwarding a disc do not necessarily get a prize. The only way a prize is got is by filling up a post-card—which is sent on receipt of the disc—in some such way as to be useful to the firm. Mr. Cook also said: I would further point out that the suggestions received on these cards have been of great use to us in our advertising campaign, and could show, if necessary, that we have received real value for the prizes. Mr. Wontner argued that the securing of a disc was entirely a matter of chance. For the defence, Mr. Horace Avory, K.C., submitted that a lottery must be a matter dependent entirely on chance. Admitting

that the finding of the disc depended on chance, the obtaining of a prize did not. Before anyone could get a prize they had to exercise some skill, or at least make some effort of their own—a mental effort—for which a prize would be given. Mr. Gillespie (the Magistrate) said on the authority of "*Hall v. Cox*," he did not think this was a lottery, and, therefore, on that ground, he would dismiss the summons.

Feeders under Cost.

At the meeting of the Burnley Town Council on August 3, a lady health-visitor reported that it would be a real help to the work among infants if the Council would reduce the price of the feeding-bottles lent by them. At present 2*d.* was charged for a teat, but as a completely fitted-up bottle could be had for 2*d.* the price asked for teats was absurd. It was stated that the bottles cost the Corporation over 4*d.* each, and in order to encourage people to use them it was resolved several years ago to sell them very cheap. The Council offered them to the public at 3*d.* each, and if the teat was lost 2*d.* had to be paid for a new one, if the bottle was broken 1*d.* was charged, and a similar charge was made for replacing the india-rubber end of the bottle. Councillor Haworth said the cost of the bottles to the Corporation was 4½*d.* each, buying them by the gross, and he did not think they were acting wisely in letting the public have them so cheap as they were doing. The cheaper they sold them, the less people valued them. Some of the public thought nothing of paying 1*s.* 1½*d.* for patent medicines, and they ought to pay at least the cost-price for the feeding-bottles. No action was taken in the matter, it being argued that the Council had to look for their return in the improved health of the community.

Universal Penny Postage.

Mr. J. Henniker Heaton, M.P., writing from the House of Commons, says:

It is intended to form a league for the establishment of universal penny postage, so that any inhabitant of our planet, white, black, or yellow, may be enabled for the sum of 1*d.* to communicate with any other, at the lowest possible rate and the highest attainable speed; Englishman with Frenchman, German, Italian, or Russian; European with American; Asiatic with Australian or African; so that when one soul has something to say to another, neither colour, nor religion, nor greed, nor diplomacy, nor national antipathy, nor latitude, nor longitude, nor poverty, nor any other barrier shall stand between them.

C.O.D.

In the annual Blue-book issued by the Postmaster-General allusion is made to the Committee which is considering the details of a cash-on-delivery system between this country and the British Colonies and Dependencies and—as regards parcels—Egypt. The P.M.G. adds that he hopes at no distant date to make definite proposals to the several Post Offices concerned.

Store-prices.

The Army and Navy Stores Circular for August contains, among others, the following prices:—

Acid, citric, 1*s.* 6*d.* per lb.; Frame Food jelly, 9½*d.* per bot.; gum arabic, "best," 1*s.* 4*d.* per lb., "selected, large," 3*d.* per oz.; turpentine, rectified, 9*d.* per pint tin, 1*s.* 5*d.* per quart tin, 4*s.* 6*d.* per gal. (tin 6*d.* extra); Vaseline hair-tonic, 9½*d.* and 1*s.* 8*d.* per bot.; Knight's anti-rheumatic soap, 1*s.* per tab.; Lysoform, 11*d.*, 2*s.* 4*d.*, and 4*s.* 3*d.* per bot.; Pompeian massage-cream, 1*s.* 6*d.* per jar; Captain Keane's horse condition-powder, 2*s.* 7*d.* per tin.

Another quality of "gum arabic" is quoted at 9*s.* per lb. This must be an extra-superfine quality, six times better than the "best."

The Civil Service Stores' prices for August include—

Acid, citric, 1*s.* 7*d.* per lb.; Brill's sea-salt, 1*s.* 4*d.* per box of 1 doz.; camphor, 3*s.* 7*d.* per lb.; King's dandelion pills, 1*s.* per box; Abbey's salt, 1*s.* 2*d.* and 2*s.* 3*d.* per bot.; Eno's fruit salt, 1*s.* 9½*d.* and 3*s.* 1*d.* per bot.

The new name for Quassine, "a concentrated form of quassia" for syringing plants, etc., is "Cirengol." It is sold at 5*d.* per tube, sufficient to make about 20 gals. of liquor.

Disinfection in Consumption.

Dr. Thomas, the medical officer of health for Stepney, in his annual report states that he communicated with the medical officers of health in those districts which had adopted voluntary notification of consumption with the object of ascertaining, *inter alia*, what methods of disinfection

tion of rooms, etc., were adopted. Replies had been received from the sanitary authorities of ten metropolitan boroughs; six of these used formalin by spray or fumigation, three used sulphur fumigation; in the remaining borough the walls were sprayed with Cyllin, corrosive sublimate, or carbolic, and then stripped. Replies had also been received from twenty-eight provincial boroughs. The most popular form of disinfection with these is formalin in spray or fumigation. Sulphur fumigation was carried out in a good many instances. These two methods and stripping the walls are employed in one or other form by almost all the twenty-eight provincial boroughs. The disinfectants other than these employed in the form of spray, swab, or fumigation are corrosive sublimate, Izal, chlorinated lime, Chlorox, Cyllin, and carbolic acid.

Enjoying Themselves.

During Sunday night, July 30, a burglary took place on the premises of Mr. J. W. Beck, pharmaceutical chemist, High Street, Huntingdon. This was discovered when Mr. Beck went downstairs on the following morning. Three persons had evidently been in the house, and had got some food, sat down at the dining-table, and ate it. A jug was on the table, and the men had evidently gone to the cellar for some beer, but they brought up a jug of vinegar. They had helped themselves to cigars, and had collected some plated articles in a bag to take away. They also put a clock outside the window for removal, but none were actually taken away, as it is believed they were disturbed. All that has been missed is about 2*l.* in money from the shop-till.

Birmingham Notes.

The medical men of the city are at loggerheads on the subject of medical sick-clubs.

One of the largest firms of milk-purveyors in Birmingham has retained an analyst, who is also a pharmacist.

At the recent assizes one medical man designated the opposing medico's opinion "absurd," and was somewhat severely rebuked by the learned Judge for a manifest breach of professional etiquette.

Mr. Vaughan Hughes, who was formerly public analyst for Dudley, and recently has been engaged in special work at Messrs. Kynoch's, has recommenced laboratory practice in Edmund Street, Birmingham.

Birmingham sent a fairly large contingent to the Apothecaries' Hall Assistants' examination this month, and most of them (chiefly ladies) did very well. They hail from the local hospitals and dispensaries, and occasionally from doctors' surgeries.

The Bank-holiday exodus proves disastrous to local trades, and especially to pharmacy, so far as business is concerned. Works are closed down for the week both in the Birmingham district and in the Black Country, so that the pharmacist is given an opportunity for a breath of fresh air.

Mr. A. M. Chance is bent upon securing to Birmingham for ever the Warley Woods and Park. He has pressed into his service for this purpose all sorts and conditions of men and women, from Bishop Gore and Sir Oliver Lodge down to the "man in the street." A sum of 20,000*l.* is required, and two-thirds has been collected.

The Smethwick Town Council has unanimously decided to apply for an order to become a county borough. Under this scheme it will be necessary to make three new appointments—viz., an inspector under the Explosive Acts, an inspector under the Food and Drugs Acts, and a public analyst. The first two could be pluralised "and a public analyst could be appointed at a small cost." Science comes last, and costs little.

East Anglian Notes.

Among a lot of seized and forfeited goods sold by auction at the Customs House, Yarmouth, last Friday, was a quantity of "perfumed spirits." Whether the importers had failed to pay duty on them or they were the proceeds of a raid on some unhappy smuggler the auctioneer did not state.

The Norwich Education Committee have arranged science classes for the approaching winter. Mr. Herbert G. Mayo is to teach physics, Mr. Frederick J. Freeman chemistry, and Mr. Percival Looker botany. The pharmaceutical students of Norwich would do well to make a note of these classes.

Mr. F. S. Cullen, chemist, Norwich, informs us that the poisons in the chemist's stock-in-trade sold at North Walsham last week (*C. & D.*, August 5, p. 245) were bought by him. Mr. Cullen thought the attendance at the sale very good, there being eight or ten chemists present besides a large gathering of the general public.

Delightfully situated amongst the woods redolent of resinous pines and almost within sight and sound of the sea, an ideal site has been secured between Holt and Sheringham for a sanatorium for tubercular children. As soon as possible a small building will be erected, and made capable of extension as required.

The pharmacist of the town who is daily hemmed in by bricks and mortar would envy the establishment of Mr. T. A. Craske, chemist, of Holt. A grand old garden lies immediately behind the shop, and customers have an uninterrupted view of a well-kept lawn, on which a fine yucca plant grows, this year in flower—a septennial event only.

The chemists of the coast towns of East Anglia are now in the midst of their harvest. From early morn till long past dewy eve their services are in constant demand. In spite of the exceptionally favourable weather of the early summer, visitors were late in arriving; but now they have arrived in force, and hopes are entertained that an indifferent June and July will be followed by a record August and September.

Poor-law Notes.

Miss M. Burt, chemist and druggist, has resigned her position as dispenser at the Bolton Union.

Mr. J. C. Collins, chemist and druggist, has been appointed assistant dispenser of medicines by the Guardians of the West Derby Union.

Cricket.

Allenburys C.C. v. Castle United C.C.—Played on August 5 and resulted in a victory for Allenburys by the narrow margin of one run, the scores being: A. 39, C.U. 38.

Sheffield Notes.

The Sheffield University Bill received the Royal Assent on August 4.

Messrs. H. Antcliffe and R. D. Douglas are to play Mr. W. S. Crouch and Dr. White at golf at Dronfield on August 17.

The visit of the Nottingham chemists who were to play the Sheffield Pharmacy Athletic Club at cricket on August 3 was somewhat marred by the rain, which rendered play impossible. The Nottingham team, consisting of Messrs. Lee, Adamson, Beverley, Bowmer, Carr, Escott, Parkes, Ringer, Turton, and Wood, were met at the station by a deputation from the Sheffield Club, and the afternoon was spent in inspecting the works of Messrs. Walker & Hall. The visitors were then entertained to tea, and were officially welcomed by Mr. R. D. Douglas (Vice-President), who occupied the chair, in the absence of the President (Mr. J. G. Jackson), Mr. Lee (captain) responding. The other Sheffields present were Mr. Percy Carr (Treasurer), Mr. C. Richards (Hon. Secretary), Messrs. Appleton, Whitworth, Simpson, Hopkinson (senior and junior), and Preston. After tea the party adjourned to the Empire to finish the evening. The visit proved most enjoyable, and rain failed to damp the spirits of these athletic pharmacists. The return visit to Nottingham is fixed for a fortnight hence.

Fires.

At Crook on Monday a fire occurred at the premises of Mr. J. W. Clemitson, chemist and druggist, but the flames were soon mastered, and no serious damage was done.

A fire occurred on August 1 at the motor-spirit store attached to the business of Mr. T. W. Salmon, chemist and druggist, Stockton-on-Tees. The outbreak was caused through the errand-boy dropping a lighted match. Fortunately the flames were speedily subdued by the fire-brigade.

THE PENANG CHEMISTS who were fined on May 3 under the Morphine Ordinance (as reported in the *C. & D.*, June 10, p. 911) lodged an appeal against the magistrate's decision, but on the cases coming up in the Appeal Court they were withdrawn.

Irish News.

Local newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

Apothecaries' Hall in Ireland.

The new Council of the Apothecaries' Hall in Ireland has been elected as follows: Governor, Lieut.-Colonel F. G. Adye-Carran, M.B., Univ. Dublin, F.R.C.S.I.; Deputy-Governor, G. Seymour Stritch, L.R.C.P. Edin., L.R.C.S. Edin., L.F.P.S. Glas.; Directors, A. Atcock, M.D.; J. D. Crinion, L.R.C.S.I.; J. O'Connell Delahoyde, F.R.C.S.I.; J. Evans, L.A.H.; T. D. Finucane, L.F.P.S. Glas.; E. F. Hanrahan, M.B.; R. J. D. Kenny, F.R.C.S.I.; H. W. Mason, L.A.H. Dub.; J. C. McWalter, L.F.P.S. Glas.; R. Montgomery, M.R.C.S.E.; R. G. O'Flaherty, M.B.; J. Shaw, L.R.C.S.I.; G. A. Stritch, L.F.P.S. Glas.; representative on Medical Council, Lieut.-Colonel F. G. Adye-Carran, M.B.; Secretary, E. F. Hanrahan, M.B., R.U.I.

Chemists' and Druggists' Society of Ireland.

The committee of this Society met at Belfast on August 7, in the new rooms, 11 Waring Street. Mr. Wm. Lyttle presided, and there was a good attendance. Mr. Frackelton reported the outlay till date on new rooms, as also the total receipts towards the repairs and furnishing fund, and obtained permission from the committee to expend a further sum of 10/. The Hon. Secretary produced the perfected lease, and it was handed to the Hon. Treasurer (Mr. Gibson) for safe keeping. Reports of annual social and annual concert were presented and adopted. It was decided that the new rooms be opened about the middle of September by a smoking-concert, the arrangements to be left in the hands of Mr. Frackelton.

Personal.

Sir Jas. Haslett, M.P., has resolved to retire from Parliament at the general election, owing to ill health.

Mr. P. J. Timoney, pharmaceutical chemist, passed the recent Second Professional examination of the Royal College of Surgeons and Physicians of Ireland, obtaining very high marks. Mr. Timoney obtained the medal in anatomy and also in histology, which is awarded to the most distinguished student of the year studying these subjects by the Medical Faculty of the Catholic University School of Medicine.

Business Growing.

Messrs. Wm. Dobbin & Co., North Street, Belfast, are about to make extensive structural alterations to provide additional space for the drug-department.

Fire.

The temporary laboratory of the Dublin College of Science at Adelaide Road, Dublin, was destroyed by fire on August 5. The building, which was of wood and galvanised iron, was completely consumed within an hour. The flames spread to a neighbouring timber-yard, which also was destroyed.

Motor v. T. am.

Mr. George D. Beggs, M.P.S.I., Dalkey, on August 7 had his motor-car, valued at 400/., smashed to matchwood by collision with a tramcar. Mr. Beggs, accompanied by his wife, two children, and a friend, left home for a motor-tour, and when a short distance outside the town the chauffeur endeavoured to pass a tramcar by steering to the front. In doing so a second tramcar, which was approaching from the opposite direction, dashed into the motor, the force of the impact shooting out the occupants like so many skittles. Happily no one was injured, but all received a severe shaking.

Scotch News.

Local newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

A Scotch Revival.

Three years ago the British Chemical Co., Ltd., deemed it expedient to wind-up their kelp-making business in Tiree, but the occupation has now been revived in Tiree and the Long Island at the instance of the old company.

There are now despatched from Tiree every fortnight cargoes of tangle ash and kelp amounting to 120 tons in weight, and equalling in value 600/. It is stated that of the cargo shipped during the first week of July eighty tons were collected in the west end of the island, one man contributing fourteen tons, roughly estimated to be valued at 70/. Four and a half tons of air-dried tangle, which still retains nearly 40 per cent. of moisture, usually yields about a ton of ash, for which the crofter receives 5/. At Ross of Mull and other centres, where drift-weed is frequently cast ashore in enormous quantities, the company intend to appoint agents, who will receive tangle ash from all who care to engage in its preparation.

In his Father's Footsteps.

Among the names of those who passed the recent Final examination in medicine at Glasgow University is that of Mr. W. Noble Walker, eldest son of Dr. Walker, Greenock (who is himself a qualified chemist and druggist). Dr. W. Noble Walker served five years' apprenticeship to pharmacy before starting his studies for the medical profession. His early training as a chemist stood him in good stead, for during his student career he gained the Kerr Pursary for Anatomy, besides several medals, and class prizes for general excellence in clinical medicine, surgery, etc. His ability has soon been recognised, for he has already been appointed house-surgeon under Professor Clark in the Royal Infirmary, Glasgow.

Fire.

An outbreak of fire, which might have been attended with a more serious result, occurred on August 6 in the warehouse of Messrs. Cockburn & Co., Ltd., chemists, Glasgow. Fortunately, the outbreak, which was confined to the roof of the building, was noticed and reported at once, and the fire brigade, who were smartly on the scene, succeeded in extinguishing the fire in a short time. The building, which is three storeys in height, is situated in East Howard Street, a rather congested part of the city, where a disastrous fire happened some years ago, involving about a quarter of a million in damages. A considerable portion of Messrs. Cockburn's stock has been damaged by water.

Bowling.

At the annual meeting of the Eastern District of Stirling-shire Medical and Pharmaceutical Bowling Association held on August 4 at Falkirk, Mr. J. McNiven, chemist and druggist, Falkirk, was unanimously appointed President in place of Dr. Smith, resigned. Mr. J. W. Bennie, chemist and druggist, who has now removed to Polmont, resigned his position as Secretary and Treasurer, and a hearty vote of thanks was accorded to him for the excellent services he had rendered in bringing the Association to its present prosperous condition. Mr. A. Forrester, chemist and druggist, Falkirk, was appointed Secretary and Treasurer, the committee consisting of Dr. Smith, Dr. McCracken, Mr. Robert Sinclair, and Mr. Marshall.

Jottings.

The decision in the Bile Beans case is expected about August 15.

The "Dundee Advertiser" has copied from THE CHEMIST AND DRUGGIST the note by "Xrayser" on Sir John Leng's "Why" (C. & D., August 5, p. 257).

The Week's Poisonings.

SIX of the seventeen fatalities resulting from poison that have occurred during the past week were misadventures. In three cases "the wrong bottle" was taken. The victims included the five-year-old daughter of a gardener, named Oliver, at Loxden Park, Colchester, who was given liniment in mistake for whooping-cough mixture by her mother.—William Brayley (70) drank a lotion instead of a mixture at West Cross, near Swansea. He was in the habit of carrying lotion in one pocket and the medicine in another.—At an inquest held at Mansfield relative to the death of a miner, named Thomas Beaumont Morrett, it transpired that the deceased drank in mistake for indigestion-mixture a liniment supplied by a local chemist. The liniment-bottle was not labelled "Poison," and the Coroner, commenting on this, said that Mansfield chemists should

warn their assistants to caution people when selling such preparations.—Ernest Isaac Davis, a Notting Hill photographer, who suffered from insomnia, inadvertently poisoned himself with an overdose of laudanum at Walton-on-the-Naze.—At Burton Crescent, N.W., Florence Talley, aged eleven months, swallowed some poison (unnamed), and died on the way to University College Hospital.—Mary White, nearly two years old, daughter of a gardener's labourer at Sandbeck, sucked some matches, and died from phosphorus poisoning.—Three strychnine suicides are reported. At Wood Green, Alfred Farrier took it in the form of rat-poison. Clara Read (30), of Bicker, near Boston, spread vermin-killer on bread-and-butter, and ate it, dying subsequently of strychnine poisoning; while strychnine was likewise taken by a Warwickshire farmer who suffered from insomnia consequent upon monetary difficulties.—Henry Lewis (32), a labourer out of work, poisoned himself with oxalic acid in Highgate Woods. A Royal Artilleryman, named Jesse Smith, committed suicide at Blackheath with oxalic acid after trying to cut his sweetheart's throat. A Kirkcaldy potter, named James Crawford, died from laudanum poisoning; and the same poison caused the death of a photographer's traveller, named Scott, at Swinton. A horsekeeper poisoned himself with carbolic acid in a yard in Great Ormond Street. W. Francis Henry Norton, a Sparkbrook gunfitter, in a fit of depression took potassium cyanide. The only unscheduled poison (besides the matches already mentioned) was hydrochloric acid, taken, apparently with suicidal purpose, by David Hardy, a Spalding tinman, and by a woman, named Campbell, living at South Woodford.

French News.

(From our Paris Correspondent.)

A LIFE ON THE OCEAN WAVE is at present practically impossible for pharmacists and assistants except during their brief holidays. M. Curet, of the Marseilles Assistants' Association, proposes to change this unsatisfactory state of things by compelling every ship carrying a surgeon to embark a dispenser also.

A NEW LINE FOR PHARMACISTS.—Dr. Carles, the well-known Bordeaux pharmacist, states that the new-laid egg—or the egg not yet laid for that matter—may contain microbes under certain conditions. He is convinced that sooner or later doctors will prescribe eggs carefully selected for delicate children, aged persons, convalescents, etc., and hints that the pharmacist who creates a speciality of the sale of the transparent, sterile, aseptic article would make a rapid fortune.

A CENTENNIAL PHARMACY.—When at Nancy recently, I learned that Monal's pharmacy had just completed its hundredth year of existence. I looked up the address, curious to see what an old Lorraine *officine* was like. I was a good deal disappointed (archæologically speaking), for the establishment—a stone's-throw from the Place Stanislas—is thoroughly up-to-date, and the only item suggestive of past times is a collection of ancient drug-pots around the top shelf.

THE LEGION OF HONOUR.—Professor Guignard, the eminent Dean of the Paris College of Pharmacy, has been nominated an officer of the Legion of Honour, a distinction that has been very well received in pharmacy circles throughout France. M. Guignard's scientific work has principally been in connection with botany, on which subject he is an authority of world-wide repute. He is a member of the French Institute and succeeded the late M. Planchon as Dean of the College of Pharmacy here in 1900. In 1902 he was elected an honorary member of the Pharmaceutical Society of Great Britain.

THE FOX AND THE GRAPES.—During a business journey last week I noticed a showcard which seems to stare at one from every pharmacy-window just now in some of the towns of Eastern France. It is an advertisement for a grape-ferment. The illustration shows our old friend Reynard looking at the grapes, and doubtlessly protesting they are sour. The preparation is manufactured at Malzéville, just outside Nancy, and is largely advertised. The

bottles in which it is put up are greatly like those in which the morning milk is left at the door of Parisian apartments, and the white colour of the preparation enhances the illusion.

PHARMACY STUDENTS.—According to the figures supplied to the French Minister of Public Instruction, there are a total of 3,134 students inscribed in the various colleges of pharmacy in France. Of this number 81 are candidates for the University diploma of Doctor of Pharmacy. The remaining 3,053 aspire to become pharmaciens, and of these 88 are women. Of the total, 23 are foreigners, 2 being of the fair sex. These figures show a diminution on the previous years. There is a total of 23 colleges in France where pharmacy is taught, 12 of these being preparatory schools. Paris heads the list with a total of 1,237 students, Bordeaux being second with 231, while Rheims is at the bottom of the list with 22 only.

A PIOUS PILGRIMAGE.—Being at Nancy recently, I took the opportunity of viewing the monument raised to the murdered director of the local school of pharmacy. It is executed in excellent taste, artistic yet severely simple, as befitted the man. The bronze bust, which has been placed in the little botanical garden immediately outside the school of pharmacy, represents the late director in his official robes; and the simple granite pedestal bears the following inscriptions on its four faces:

G. M. Bleicher, 1838-1901. Died a victim of professional duty. Director of the Superior School of Pharmacy, Army Surgeon-Major, Member of the Higher Committee of Public Instruction. Erected by his Friends, his Colleagues, his Pupils.

A palm-branch below the name bears a double meaning: the martyr and the scientist. His studies, "botany, geology, mineralogy, archæology," also appear on the pedestal. The fine thistles that grow around the monument are not there by mere hazard. This flower figures on the city arms of Nancy, and is accordingly as popular in Lorraine as in Scotland: it is a pretty floral tribute to the rugged virtues of the old Alsatian army-man. There is some talk at Nancy of giving the name of "Gustave Bleicher" to one of the streets near the school of pharmacy. The bust is a decided improvement on the other sculpture which adorns the University buildings at Nancy. The façade bears bas-reliefs of Henri Braconnot, chemist; a local celebrity, who was born at Commercy in 1780 and died at Nancy in 1855; Dr. Lepois, a jurisconsult and a poet—the four faculties of science, medicine, law, and literature being thus represented. Four of the "Pious Founders" of the University figure at full-length. I had some trouble to recognise Napoleon III. in a laurel wreath and a scholastic cloak.

PARIS MUNICIPAL COUNCIL.—In connection with the proposed visit of the Paris Municipal Council to England as the guests of the London County Council, it may be interesting to note that the Paris body now boasts but one pharmaceutical member—M. Alfred Elie Houdé, who was elected in 1899. Biographical details were given in a recent issue of the *C. & D.*, so need not be repeated here. M. Astier (who was so long a conspicuous member of the Council, and at one time its Vice-President) has now left municipal for parliamentary honours, and has shorn the Council of its brightest pharmaceutical ornament. There are, however, two or three other councilmen whose individualities may interest pharmacists. M. André Lefèvre, who is member for the Sorbonne quarter of Paris—the heart of the Latin quarter—began life as a chemist, and he still continues his experience in this science, although he has embraced the career of journalism. M. Pannellier and M. Lampué are photographers. Dr. Navarre is perhaps the best-known medical figure in the Council; he was President in 1898 (the year when M. Astier was Vice-President) and is a retired Surgeon-Major of the army. M. Chautard is head of the Chemical Laboratories at the Ecole Normale (the establishment where Pasteur made his first experiments) and holds a similar post at the Faculty of Medicine; he, like M. Lefèvre, represents one of the scholastic quarters of Paris. M. Edme Brenot is Vice-President of the Medical Association, and was a member of the jury at the 1900 International Exhibition; and M. Eug. Billard, barrister, holds briefs for several pharmaceutical associations, and in his leisure hours writes patriotic poems to the Tricolour flag, etc.

A Visit to Pharmaceutical Paris.

With the B.P.C. Visitors.

THE visit of British pharmacists to Paris was brought successfully to a close on Friday, August 4, by the party visiting the leading places of pharmaceutical and scientific interest in this city, the programme arranged, as given in the *C. & D.* of August 5, being followed with but slight deviation. The greatest courtesy and attention were shown to the party on all sides, and should be taken not only as a tribute to British pharmacy as a whole, but also as a proof that the good feeling now existing between France and Great Britain is widespread. The following is a detailed report of Friday's visits:

"A southerly wind and a cloudy sky proclaim it a hunting morning," and the party of British Pharmaceutical Conference hunters accordingly for mackintoshes and umbrellas before entering the conveyance. Even the driver had concealed the splendour of his scarlet-faced "postillion" jacket and its wealth of brass buttons under a sad-coloured rainproof coat. But the rain held up, and at a few minutes before nine o'clock "crack went the whip, round went the wheels," and over the Pont des Invalides went the three horses with their jingling bells, along the wide esplanade and the leafy Avenue de Bréteuil till Pasteur's Institute was reached, with its marble still of virgin white. The emblematical groups around the base of the statue and the seated figure of the great chemist himself were inspected, and the waggonette continued its way to the gates of the

PASTEUR INSTITUTE.

There the party was joined by Dr. Lewen, of the British Hospital, Paris, and M. Alphonse Barbin, a French pharmacist, who, in remembrance of a pleasant visit to Mr. W. B. Cowie in the Northern Athens, had kindly consented to assist me, writes our Paris correspondent, in the pleasant task of pilotage, for, as a lady of the party said—

We were chemists in distress,
Wandering in a wilderness;
But, by means of French assistance,
We can travel Paris any distance.

And a goodly distance indeed did we travel in the Pasteur Institute. Dr. Roux, the world-renowned *savant*, devoted nearly two hours to personally conducting the party over the Institute. After receiving us with much courtesy, he conducted us to the library, where he made a little speech of welcome. A move was then made upstairs to the bacteriological laboratories, first those devoted to the regular classes, and then to the individual research laboratory. Dr. Roux drew attention to every feature in detail there and in the rest of the laboratories subsequently visited. As we entered one laboratory a cock crew. Some banter took place about the "coq Gaulois," and Dr. Roux explained that these chickens were being experimented upon for a "spirille" microbe caused by the bite of a tiny insect, the interesting point being that this "spirille" has a close resemblance to the microbe of a certain fever prevalent in Eastern and Central Europe. Numberless questions were asked, but the indefatigable doctor never wearied in answering. He explained, at a pharmacist's request, the best method for sterilising medicaments, personally demonstrating the subject by the handling of the autoclave. He pointed out the English journals in the upstairs library, and made appreciative allusion to Lord Lister and his work. In the garden downstairs he told the story of Jupille, "the only concierge in Paris who has his statue in front of his lodge." "Yes, he is still janitor here; it was he who received you at the gate and conducted you to me. No; he was not the first person to be treated for hydrophobia on Pasteur's system—the third or fourth, I believe. You know the incident: he was a peasant lad coming out from school with his comrades, when a mad dog attacked the little group. Jupille faced the animal, twisted a cloth round its jaws to close them, while he fractured its skull with one of his wooden shoes, and saved his schoolfellows from further danger."

A tale of heroism always appeals to pharmacists and non-pharmacists alike, and the statue of Jupille attacked by the dog was regarded with unusual interest and with frequent

glances at the hero himself, whose uniform was visible behind the shrubs close by. After seeing the inoculation of several hydrophobia patients, the party filed down towards the basement to visit the tomb. Pasteur's last resting-place has never been adequately described, and its beauty and impressiveness cannot be photographed. In the mosaic dome, four white-winged angels—Faith, Hope, Charity, and Science—hover over the tomb of the "Master," and all around the walls subjects (also in mosaic) refer to his scientific work—the vine, the ox, the sheep, etc. Then across the road we went to the Biological Chemistry Department, where, among other things, a miniature brewery in the fermentation laboratories attracted the special attention of the British visitors. Then the hospital was visited, and proved to be not the least instructive feature in this intensely interesting two hours' promenade. The apotheosis of antiseptic—with its tiled walls and floor, its glass and ironwork above, its iron furniture—not a wall, floor, or ceiling that cannot be washed down with a hose, not a piece of furniture that cannot be sterilised. Each patient entirely isolated, no one but the nurse allowed to enter the room. The nurses, who are Sisters of Mercy, not only wear white blouses from neck to feet, but their very hair is covered by an easily washable linen covering—nothing bare but the actual face and hands. Then came the leave-taking, and Dr. Roux—who had been joined by Dr. Martin, director of the hospital—took courteous farewell after conducting us to our vehicle, and I am convinced that few visitors ever went over a scientific establishment more thoroughly or more pleasantly.

THE LAËNNEC HOSPITAL

is not far away and a few minutes brought us to the entrance. The antithesis of the Pasteur Hospital, the old sixteenth century convent is interesting as a sample of the average French hospital. Here we were received by M. Bourquelot, chief pharmacist of the hospital, Professor of Galenic Pharmacy at the Paris Superior School, and General Secretary of the Paris Society of Pharmacy. He presented us to another gentleman, clad like himself in the uniform working blouse, as "Monsieur le Directeur de l'Hôpital," who had wished personally to greet the British party. The pharmacy was visited in detail, the quaint copper vessels (200 years old) used for "tisanes" etc., the copper pans and usual stock-bottles. The little flat wire baskets containing the medicaments were just ready for carrying into the wards, and the house pharmacists—smart young fellows in white blouses—smiled pleasantly at the unwonted invasion of their sanctum. Professor Bourquelot showed his own private laboratory, and submitted some new products he has just extracted from gentian. The director personally assisted the professor in showing the party round the wards. The hospital is built in the form of a "croix lorraine" (double cross) so that four huge wards are visible from each central hall, through the glass doors. A little "turn" outside showed us the quaint old architecture, the flying buttresses, the old sun-dial, where the members of the party brought their Latininity to bear on the inscription:

Perchance even now this marks the hour of thy death.

Any gloomy thoughts were quickly dispelled, for we were to see the "Salle de Garde"—the home of the "internes" or house-pharmacists. As a matter of fact, it is not a large room, and as the young fellows were just sitting down to their mid-day meal, entrance was not quite practical. So we passed in single file before the door, thus allowing the ladies a glimpse of a "bachelors' den," the internes taking this intrusion on their privacy good-naturedly and even merrily enough.

It was now 11.45, but the Bon Marché was so temptingly near that a little visit seemed only the due of the ladies who had so courageously done half a day's hospital and laboratory visiting. So an exception was made to the rule that nought but pharmacy and science was to figure on the *C. & D.* programme, and half an hour was spent among the "bargain counters" and "remnants" and nicknacks of the great Paris drapery emporium and general store.

AT A STUDENTS' CAFE.

At 12.30 the Taverne du Panthéon was reached—the lunch rendezvous chosen by a French pharmacist, for here his foot was on his native heath. It was a pleasant informal meal and a welcome rest. A running fire of jokes and anecdotes

in all dialects, from the Doric of the canny North to a slight brogue of a certain Emerald Isle of the ocean, advantageously replaced set speeches, and any modern scoffer at the virtues of the Blarney-stone would have been silenced had he seen the fair of several nations hanging on the words of a youthful pharmacist pleading guilty to thrice embracing the historic rock in question.

THE PARIS SCHOOL OF PHARMACY

was reached about 2 P.M. M. Guignard, the director, who had intended to personally receive the party, was unexpectedly prevented at the last moment. The British visitors were accordingly greeted by M. George Oudin, President of the French Association of Pharmacy Students, and visited the principal parts of the building. The library was first inspected, the cosmopolitan character of the contents being pointed out, the B.P. among the numerous foreign codexes and a complete collection of the *C. & D.* filed among numerous foreign periodicals—German, Spanish, Belgian, Russian, etc. The materia medica collection is extensive, and some little time was spent in studying the numerous and handsome specimens; while the zoology gallery seemed quite large, seeing the small place this science occupies in modern pharmacy. But the beautifully prepared natural history specimens especially struck those who were connoisseurs in this line. The Salle des Actes with its collection of historical portraits was next visited, the paintings of Caventou and Pelletier being particularly noticed, as well as of Parmen-tier, "the man who discovered the potato," and Moissan, "who makes the artificial diamond." Besnard's frescoes in the vestibule were duly admired, and then a lecture amphitheatre was reached. Here the party seated themselves, for the fatigues of the day were beginning to tell on all but one or two hardy Northmen; but M. Oudin cordially invited us to follow him to the rooms of the Students' Association, where he assured us we should find more comfortable seats than the benches of the school. It was luckily but a short

drive, for the rain was pattering down and only a glance was caught of the Pelletier-Caventou statue beyond the curtains of the conveyance. Arrived at the club-house, the guests were ushered into the reception-room, where they were received by members of the Association committee, and the visitors sank into the most comfortable of arm-chairs.

"Now," said a lady of the party, "I could just do with a cup of tea."

But M. Oudin knows a plan worth two of that. Sundry golden-necked bottles stood on a sideboard, and soon the popping of champagne-corks broke the restful silence. The glasses filled, M. Oudin arose to formally express the double pleasure he felt in receiving the party, firstly as fellow-pharmacists, but not less as representatives of the great country now linked to his own in the bonds of

THE ENTENTE CORDIALE.

He drank to Britain in general and to British pharmacy in particular. M. Oudin spoke in his own language, and I had the pleasure of interpreting his remarks. But Mr. Brodie, who replied as the senior of the party, replied to M. Oudin in French. He expressed his admiration of France in general, and especially of Paris and its School of Pharmacy, terminating by wishing long life and prosperity to the students of the Association. The visitors drank M. Oudin's health with musical honours: "For he's a jolly good fellow," that thoroughly British custom, which filled the hearts of our French hosts with some wonderment until it was duly explained by the *C. & D.* representative. Mr. Gibson added a few remarks in the eloquent and "sympathique" manner of which his countrymen have the secret. He had remarked with pleasure the evidently high status of pharmacy in France, as evinced by the handsome shops and other details. He expressed the gratitude of himself and his friends for their kindly reception and the agreeable remembrance they would all have of their visit. Light

Members of the British Pharmaceutical Conference who Visited Paris.



[Photograph especially taken for THE CHEMIST AND DRUGGIST at the British Island Club, Neuilly-sur-Seine, July 30, 1905.]

Back row (from left to right): M. Alphonse Barbin (Paris), Mr. W. B. Cowie (Edinburgh), Mr. R. Brodie (Glasgow), Mr. W. J. Gibson (Belfast).
Centre row: Mr. H. Lyon (Paris), Miss Owen (Paris), Misses Kipping (Paris), Mr. R. P. Rees (Dowlais, S. Wales), Mr. J. Ford (Kirriemuir), Mr. J. Hinton Lake (Exeter), Mr. R. Lindsay (Peebles), Mr. C. E. Lord (Paris representative of THE CHEMIST AND DRUGGIST), Miss Hinton Lake.
Front row: Miss Jessie Ford, Mrs. John H. Smith (London), Mrs. W. B. Cowie, Mrs. Hinton Lake, Mrs. R. Lindsay, Mme. Alphonse Barbin, Miss Smith (Nottingham), Miss Gibson (Belfast), Masters Jack and Alee Paten (Paris).

refreshments having been served, the pharmacists visited the premises (recently described in the *C. & D.*) in detail, while the ladies enjoyed a quiet quarter of an hour in the comfortable fauteuils already alluded to. The photo (reproduced herewith) was taken outside the club-house as a memento of the visit. Seeing the pharmacy students on their balcony, the Britishers left the club-house, greeting them with a hearty British cheer.

This little reception at the club-house, all the more charming on account of its spontaneous and unexpected nature, necessitated a prompt execution of the remaining items of the programme. It was past 4 P.M. when

THE SOREONNE

was reached. A glance was cast at the church and the tomb of Richelieu before we went in the main building, crowded with students, just coming out from exams.

An amusing note here was furnished by the concierge, a voluble lady (evidently from the South), pleasant enough, but sadly puzzled.

"I was told there was to be a party of British pharmacists," she said. "But they were to come at 3 P.M."

"Yes, we're sadly late. But it was 3.30, you know."

"Oh, yes, I waited with pleasure; that makes nothing. But one said to me 'pharmacists.' The ladies are then all pharmacists, too, in Monsieur's country?"

"Well, one of them is certainly a qualified pharmacist. The others are the gentlemen's wives, sisters, and daughters."

"Ah, yes; and the gentlemen are the pharmacists."

So matters were duly arranged, and some slight attentions from a good-looking young Hibernian of the party finally broke the ice. She took her keys, and, joking the while, led us through sundry passages to the Grand Amphitheatre, bade us be seated, fetched us a wondrous description (in French) of the Puits de Chavannes fresco, which is the artistic feature of this handsome Great Hall of the Paris University, and offered us postcards of the same picture of such abnormal length that a pharmacist asked, "How much does she sell them per yard?"

The grand staircase, with its frescoed history of French science—Ambroise Paré and Bernard Palissy, Descartes, Lavoisier and Berthollet, Cuvier, Buffon, Laënnec, and Arago—surgery, mineralogy, natural philosophy, chemistry, paleontology, zoology, medicine, and astronomy—was duly admired; and then came the drive down the Boulevard St. Michel, past Musée Cluny, the Palais de Justice, Municipal Laboratory, etc., to the

PHARMACIE CENTRALE DE FRANCE.

It was a busy time, and nearly 6 P.M., but after a short wait we were put in charge of an amiable guide, whose attentions were recompense for any slight delay. He led us through stores and warehouses to where "elegant" pharmaceuticals were being prepared. Here a stamping-machine cut out a dozen of lozenges; there the pinky-white chlorate of potash rolled around in mixers; further on stick-liquorice and pectoral-jujubes were being produced; in another room the air was fragrant with chocolate. And we watched the process, from the cacao-bean to the chocolate-slab, or noted how the deft workman dotted his acid-drops on a metal plate or stamped his Vichy lozenges from a snow-white, flat mass. He quietly offered the sweetmeats right and left, and "found takers," "bar none." So, munching eucalyptus-drops and liquorice-pastilles, peppermint-lozenges and voice-jujubes, we passed in to regions where capsule-making was going on. Then, after visiting other departments, we rejoined the three-horse wagonette, with the Jehu's livery now all unmackintoshed and gleaming in the late afternoon sun. We rattled and jingled for a couple of miles along the *quais*—surely the prettiest drive in Paris, these tree-shaded, riverside roads at sunset—to the Hôtel du Palais, where dinner awaited us. After dinner

THE FAREWELL TOASTS

were pronounced, Mr. Lake, Mr. Cowie, Mr. Gibson, and Mr. Rees speaking respectively for England, Scotland, Ireland, and Wales. The speakers one and all expressed great appreciation of their visit to Paris, and especially of the interesting and instructive day they had spent amongst the scientific institutions of the city. Speaking on behalf of French pharmacy, Mr. Frank White said that British chemists could learn a good deal from

the way their French colleagues managed their affairs, and suggested that a combined and persistent effort in the British Isles for the better protection of the interests of chemists could not fail to bring about ultimately a better status of the craft, combined with considerable financial benefits. Mr. Hinton Lake proposed the health of the representative of *THE CHEMIST AND DRUGGIST*, which was received with musical honours. In reply, I ventured to hope the visitors would carry away with them a pleasant souvenir of their visit to Paris, where so much good and useful scientific work is done, and where so much of interest can be seen and learned. At half-past eight the party and their baggage were conveyed by brake to the St. Lazare station, en route for England, Mr. William Gibson leading a very hearty cheer as the party drove away.

Summer Outings.

Knight's Day Out.

ON Bank holiday, August 7, the employés of Messrs. John Knight & Sons, Ltd., Royal Primrose Soapworks, Silverton, E., had their annual picnic to Havering Hills, Essex. About eight hundred attended and were regaled with luncheon, tea, music, dancing, and sports. A regular programme, beautifully printed on Japanese paper, was faithfully followed. The band of the Royal Engineers played during the luncheon and after. At the luncheon a gratifying announcement was made to the assembled employés. Some time ago, on the recommendation of the managing directors, it was arranged that a division of profits beyond a fair percentage as return on capital should be made to the workers. As a result of this year's trading, 6 per cent. was fixed upon, and the whole of the company's employés and staff, clerks and travellers alike, are to receive three weeks' extra wages as their share of the profit. This is an action not only by means of which labour-disputes and dissatisfaction between employers and employed may be avoided, but which inevitably will result in increasing the material prosperity of the company. Needless to say, the outing of the soapmakers was a triumphant success.

Vibrona and Ozone.

ON Thursday, August 3, the staff of Messrs. Fletcher, Fletcher & Co., Ltd., Holloway, N., spent an enjoyable holiday at Brighton. Many of the party left London Bridge at 6.40 A.M., breakfasting, on arrival, at the Central Station. Another contingent followed by the 9.22 express, and at 12.30 the two divisions assembled at the Old Ship Hotel, where full justice was done to an elegantly-served luncheon, Mr. F. W. Fletcher (the governing director of the Company) presiding. Telegrams expressing good wishes for the continued prosperity of the firm and regret at their inability to be present were received from Mr. Fredk. Bascombe, F.I.C., Mr. Wm. Mair, F.C.S., and Mr. G. C. Cockcroft. "The Health of the Governing Director" was proposed by Mr. G. E. Cecil, who feelingly alluded to the cordial relations subsisting between the head of the firm and every member of the staff, to which no stronger testimony could be borne than was afforded by the fact that some of those present had been in the employment of the firm for over twenty-five years, many others counting ten, fifteen, and twenty years' service. In responding to the toast, Mr. Fletcher said that nothing afforded him greater pleasure than these occasions when an opportunity occurred of acknowledging the hearty co-operation of the staff in furthering the interests of the business, and the enthusiasm and good feeling which pervaded every department. He concluded by proposing "The Health of the Representatives," specially associating with the toast the name of his valued friend, their Indian representative, Mr. Charles W. White (Bombay). In a graceful and humorous speech Mr. C. W. White said that, although he could only regard himself as a prodigal son who had been sent into a far country, he yielded to no one in his affectionate regard for the father of that large family. When they were well, Mr. Fletcher never failed to study their interests, and, "when we are ill, he gives us Vibrona!" After a pleasant afternoon by the sea the company once more reassembled at the Old Ship at five o'clock, when a substantial tea was discussed; and at 7.30 the party bade a lingering farewell to sunny Brighton and prepared to pursue with fresh vigour their various avocations in the Vibrona vineyard.

Legal Reports.

High Court Cases.

PLASMON v. PLASMONADE.

BEFORE Mr. Justice Warrington in the Chancery Division on August 4, in the case of the International Plasmon, Ltd., v. Plasmonade, Ltd., and others, Mr. H. Terrell, K.C., moved on behalf of the plaintiffs for an injunction restraining defendants from carrying on the business of manufacturers or vendors of any food or preparation for human consumption, in solid or fluid form, under the name of "Plasmonade, Ltd.," or any other name or title of which the word "Plasmon," with or without an added suffix, formed part. The plaintiff company carried on an extensive business as manufacturers of various food-articles which were sold under the name of "Plasmon." A short time ago the three defendants—George Jones, Gustav Welton, and Chas. Ware—formed Plasmonade, Ltd., and had made certain attempts to register the word "Plasmonade" as a trade-mark. Plasmonade, Ltd., was scarcely worthy of being dignified as a company at all. They had as their registered offices a cottage somewhere near Aylesbury. It was occupied by Mrs. Wilson, who paid 6s. a week rent, and the name of the company only appeared on the palings of the back door. The old lady who kept the house received a very large number of letters, and sent them on to one or other of the defendants—he thought Jones—at some address in Quebec Street, Holborn. The nominal share-capital was 500*l.* in 5*s.* shares, but it did not appear that anything was subscribed for them in cash. Seven of the shares were held by the signatories of the memorandum, and it was said that 167 shares had been issued to these defendants; but it was not suggested in their affidavits that they had paid a farthing for them. It was, in fact, an absolutely bogus company. They intended, if they could get the public to come in, to form another company to be called "Plasmonade, Ltd.," with a capital of 50,000*l.*, and they had gone so far as to prepare their prospectus, from which, it appeared, they proposed to sell their business to the new company for 30,000*l.*

Mr. Warren, for the defendants, said they had applied for the registration of the name "Plasmonade" in Class 3, which was for substances prepared for use in medicine and pharmacy. The plaintiffs had no such registration as that, and the name was not used by them for any of their goods. The injunction was sought, no doubt, in order to prejudice their application to the Registrar. So far as concerned the use of the word "Plasmonade," there was no possibility of confusion. Plasmon was not used for the same purposes as Plasmonade. Everything sent out by the two companies in the way of packing, letter-paper, and advertisements was different. There was no attempt to approach similarity in make-up.

His Lordship: This is a very simple case. There is a very well-known preparation called "Plasmon." You want to sell a preparation called "Plasmonade." Do you suppose people will not think it is connected with Plasmon?

Mr. Warren submitted not. There were plenty of instances in which the same name was used for different purposes, and there was no confusion.

His Lordship said it was a peculiar, invented name which had been for years attached to the plaintiffs' goods.

Mr. Warren said they had no exclusive right to the word "Plasmon" until it was registered and protected by themselves. Had they a right to it as applied to things other than the goods which they were selling? The classes of goods sold by the two companies were totally different.

His Lordship said this was a deliberate attempt to steal a well-known name, and get the benefit of the reputation which had been acquired by the plaintiffs, and he should grant an injunction till judgment or further order.

THE BENEDICTINE TRADE-MARKS.

A SETTLEMENT was arranged in the case in which Mr. A. G. Green, of Cardiff, trading as the South Wales Liqueur Compounding Co., moved in the matter of the trade-marks of the Société Anonyme, etc., de Fécamp, for an order that the Register of Trade-marks might be rectified by removing the trade-mark used by the respondents (*C. & D.*, August 5, p. 262). While additional evidence for the respondents was being put in counsel announced that the parties had come to

an agreement. The motion to rectify the register was withdrawn, and in connection with the action against Mr. Green to restrain him from selling as Benedictine a liqueur not made by the Société, Mr. Buckmaster said he was willing to give an undertaking not to make any further use, in any way, of the word "Benedictine."

THE SACCHARIN PATENTS.

IN the Chancery Division of the High Court of Justice on August 8, Mr. Justice Swinfen Eady had before him an action brought by the Saccharin Corporation to restrain an alleged infringement by the defendant, T. Boyd, Queen Street, Durham, of the Saccharin Corporation's patents.

Mr. Walter, who appeared for the plaintiffs, moved for judgment in default of defence, the defence having been struck out. The minutes of the proposed judgment provided for an injunction to restrain the infringement of seven of the plaintiffs' patents and an account of profits, delivery up of the infringing saccharin, and payment by the defendant of the costs of the action.

The defendant did not appear. His lordship said it seemed rather oppressive to sue upon so many patents, but as no objection was raised in this case, he would make the order in the terms of the minutes as drawn.

Pharmacy Acts (Ireland).

LAUDANUM.

AT Dervock petty sessions on August 1, a case was listed at the suit of the Pharmaceutical Society of Ireland, 67 Lower Mount Street, Dublin, against James Lamont, grocer, Stranocum, for "that the defendant, not being a person fully qualified to sell within the meaning of 33 and 34 Victoria, cap. 26, did contrary to the provisions of the said Act, sell tincture of opium, commonly called laudanum, which is a poison within the meaning of the Act."

The case was not proceeded with and was marked "No appearance."

Expensive Dentistry.

BEFORE Mr. Justice Grantham and a special jury, at Leeds Assizes on August 4, an action was heard in which Herbert Shepherd, Bradford, sought to recover 300*l.* damages for personal injuries from William Gresley Jones and William Gresley Jones, jun., dentists, Bradford and Hawes. The plaintiff, who is twenty-six years of age, wanted some teeth extracted, but lacked courage to undergo the operation, as he was a very weak person and had suffered from excessive bleeding after the extraction of a tooth. This tendency to bleeding was mentioned to Mr. Jones, jun., and he replied that under a new process he could take out the teeth without bleeding. Early last September the plaintiff underwent the operation, Mr. Jones, jun., agreeing to extract three teeth on one side of the lower jaw at the rate of 10*s.* 6*d.* a tooth. He was asked as to what a certain drug was called, and he replied "Somnoform," adding that no other dentist in Bradford knew of it. Plaintiff was put under an anæsthetic, and when he awoke he found that six teeth had been extracted. The bleeding was profuse, and after he went home it got worse, and a doctor was sent for, astringents were applied, and other measures were taken, with the result that the bleeding was somewhat checked. He was in bed for a week, and had been unable to attend to his business for nine weeks. It was submitted for the defence that there was no negligence, but it was admitted that Mr. Jones, jun., had no diploma as a dentist. The jury gave a verdict for the plaintiff for 125*l.*

Deed of Arrangement.

Chambers, Pearson, 266 Smithdown Lane and 198 Earl Road, Liverpool, Chemist and Dentist. Trustee, Harold Sadler, 7 Victoria Street, Liverpool, C.A. Dated, July 28; filed, August 3. Liabilities unsecured 344*l.* 1*s.* 6*d.*; estimated net assets, 150*l.* The following are creditors: J. Browner, Liverpool (68*l.*); Clay, Dod & Co., Liverpool (10*l.*); Evans, Sons & Co., Liverpool (88*l.*); J. F. Wilkinson, Manchester (38*l.*); J. Taylor, Withington (22*l.*).

Gazette.

Partnerships Dissolved.

Edwards, R., and Kellett, E. R., Brunswick Square, W.C., and Smitham, Surrey, physicians and surgeons.

Thompson, I., and Merigold, G., under the style of the Blackpool Bottling Co., Blackpool, mineral-water manufacturers.

The Bankruptcy Acts, 1883 and 1890.

RECEIVING ORDER.

Meeagh, John, Dover, mineral-water manufacturer.

New Companies & Company News.

PLATTS (SALFORD), LTD.—Capital 500*l.*, in 1*l.* shares. Objects: To acquire the stock of carbide and other goods, properties, and effects upon the premises known as the "Old Mill Yard," George Street, Salford, to adopt an agreement with F. E. Platts, and to carry on the business of importers of and dealers in carbide, carbide tins, solutions and outfits, and other goods and materials used in connection therewith, etc. No initial public issue. The first directors are W. J. Kirk, F. E. Platts, and B. R. Parkes. Qualification, 2*l.* Remuneration as fixed by the company. Registered office, 18 Fleet Street, E.C.

WILKINS & CO., LTD.—Capital 1,000*l.*, in 1*l.* shares. Objects: To adopt an agreement with C. T. Thonger, and to carry on the business of chemists, druggists, etc. The first subscribers are: C. T. Thonger, 14 Cape Hill, Smethwick, merchant; Mrs. A. A. Thonger, 14 Cape Hill, Smethwick; F. B. Underhill, 80 Edward Street, Nuneaton, purveyor; J. H. Lucas, 36 Gordon Road, Handsworth, traveller; E. A. Harrison, 2 Raglan Road, Smethwick, clerk; Lily G. Powell, 7 Gomer Street, Balsall Heath, Birmingham, shorthand writer; and W. Holloway, 41 Hope Street, West Bromwich, Staffs. No initial public issue. The number of directors is not to be less than two nor more than three; the first are C. T. Thonger and F. B. Underhill. Registered office, 14 Cape Hill, Smethwick, Staffs.

NORMYL TREATMENT ASSOCIATION, LTD.—Capital 1,000*l.*, in 1*l.* shares. Objects: To manufacture and deal in a medicine for the cure of drunkenness and the drug-habit, known as the "Hutton Dixon Antidote," to adopt an agreement between A. Hutton Dixon and J. G. Dixon of the one part and the Rev. H. B. Chapman of the other part, to provide any houses or institutions, etc. The first subscribers are: The Rev. H. B. Chapman, 177 Camden Grove North, Peckham, S.E.; C. M. Chapman, 24 Buckingham Gate, S.W., metropolitan magistrate; A. Whyte, 18 Stanley Gardens, Kensington Park, W., gentleman; E. E. Lovelace, Stevenage, Herts., gentleman; O. Seaman, Tower House, Putney, S.W., barrister; L. C. Tree, 3 Penwortham Road, Streatham, accountant; and C. L. Gregory, 71 Widmore Road, Bromley, Kent, solicitor. No initial public issue. The subscribers are to appoint the first directors. Registered office, 87 Victoria Street, S.W.

E. H. CLARK & CO., LTD.—Capital 3,000*l.*, in 1*l.* shares (2,000 preference). Objects: To acquire the business carried on at 59 Edgbaston Street, Birmingham, as "E. H. Clark & Co. (Successors to G. Turley & Son)," to adopt an agreement with S. Clark, and to carry on the business of manufacturing and wholesale chemists and druggists, chemical manufacturers and dealers, manufacturers, exporters, and importers of and dealers in all kinds of medicines, medical preparations, drugs, foodstuffs, essences, extracts, etc., and to employ qualified persons to act on the company's behalf as pharmaceutical, analytical, and advising chemists, or otherwise. The first subscribers are: S. Clark, 28 Haughton Road, Handsworth, manufacturer; E. H. Clark, 28 Haughton Road, Handsworth, chemist; E. P. Carter, 14 Haughton Road, Handsworth, die-sinker, etc.; F. Kelsey, Heathfield Cottage, Water Orton, chemist; E. N. Carter, 14 Haughton Road, Handsworth, clerk; W. T. Clark, 28 Haughton Road, Birchfields, Birmingham, brushmaker; G. E. Carter, 14 Haughton Road, Birchfields, Birmingham, clothworker; and E. F. Yorke, 286 Wheeler Street, Lozells, Birmingham, traveller. No initial public issue. The number of directors is not to be less than two nor more than five. The first are E. H. Clark, S. Clark, and G. E. Carter. Qualification, 50*l.* Remuneration (except managing director) as fixed by the company. Registered office, 59 Edgbaston Street, Birmingham.

MONAZITE SAND.—At the half-yearly general meeting of the South Metropolitan Gas Co., held on August 9 at Cannon Street Hotel, the chairman, Sir George Livesey, referred to

an item in the balance-sheet under the head of "Monazite Sand Suspense Account, 19,943*l.*" The sand from which the thorium used for incandescent gas mantles in Europe is extracted is obtained in Brazil, and is in the hands of two concessionaires. They supplied the monazite to a number of chemists in Germany, who sold the sand to a group of Continental firms who worked together, and were known as the Thorium Convention. Thorium was in the hands of four or five firms, and two or three years ago it was sold at 34*s.* per kilo. Later the price was 42*s.*, and now it is 54*s.* per kilo. There is an absolute monopoly in it. The directors of the company sent an agent to Brazil to endeavour to obtain a concession to export monazite sand, but without result. Last year another opportunity was afforded them of obtaining the concession. It was known that monazite sand was found in the Carolinas, U.S.A., and an offer was made of this concession to the company, and after examining the property the offer was accepted. The company have erected the machinery for working the deposit, and that accounted for the 19,000*l.* By taking this step they would have no difficulty in obtaining these mantles in the future. They had not got the monazite sand yet, but they had made arrangements with a responsible firm to convert the sand into thorium. They had now sufficient monazite sand to give them thorium for a generation or more.

Business Changes.

Properly authenticated business notices (not being advertisements) are inserted in this section free of charge if promptly communicated to the Editor.

THE Wonderland Drug-stores, recently opened in White-chapel Road, has been closed.

THE stores at 253 Commercial Road, E., closed by Cohens last year, has now been reopened by Dr. Rahim.

MR. E. J. OWLES has purchased the business of Mr. A. J. Brown, at 55 Trafalgar Road, Greenwich.

MR. H. SOUTHALL, chemist, Walthamstow, has purchased the business of Mr. C. H. Walker, at 288 High Street, East Ham, E.

THOMAS' DRUG-STORES, Upper Street, Islington, has been purchased by Mr. Roberts, who will carry it on under the same name as hitherto.

MR. A. J. R. SWANSON, chemist and druggist, has purchased the branch business of Messrs. Anderson & Virgo at St. John's, Worcester.

The partnership hitherto existing between Messrs. Neave & Garnett, chemists, Witney, having been dissolved, the pharmaceutical portion of the business will be carried on by Mr. R. G. Neave, chemist and druggist, while the mineral-water factory has been sold to Messrs. Dale & Sharpe, of Witney.

Personalities.

DR. A. C. HOUSTON has been appointed director of water examinations under the Metropolitan Water Board.

MESSRS. JOSEPH CROSFIELD & SONS, LTD., Warrington, have been appointed by royal warrant soap-makers to the King.

MR. D. U. STILL, chemist and druggist, of Old Charlton, met with a cycling accident on August 1. While riding to business a boy ran in front of his wheel, and Mr. Still was thrown violently to the ground, injuring his right knee and hands.

MR. NORMAN F. WOODCOCK (younger son of Councillor Page Woodcock, Lincoln) has been awarded the bronze medal for materia medica by the Victoria University, Manchester. Mr. Woodcock passed his Minor in July, having only attained his majority in May last.

MISS MINNIE J. BELL, daughter of Mr. Joseph Bell, chemist, Manchester, has passed the Victoria University Matriculation examination, and has won a Corporation scholarship of the value of 60*l.* per annum, tenable for three years, at the Victoria University, Manchester.

THE HEALTH COMMITTEE of Halifax Town Council have appointed Mr. J. A. Dewhirst, F.I.C., F.C.S., pharmaceutical chemist, Bradford, as public analyst under the Sale of Food and Drugs Acts. Mr. Dewhirst will be remembered as an ex-President of the Chemists' Assistants' Association of London.

LIEUTENANT R. W. DALE, son of the late Mr. W. Dale, chemist and druggist, of Weston-super-Mare, has been appointed district officer in the Royal Artillery, after five years' service as Adjutant of the West of Scotland Royal Garrison Artillery Militia at Glasgow. Mr. Dale has risen from the ranks, and has served in Nova Scotia, Gibraltar, the Straits Settlements, Malta, Mauritius, and Bombay.

Association Ballads.

THE PURPOSE.

*The men, their aims, their daily irk;
Their troubles, trials, thoughts, and views
On things politic, foes that lurk
In friendly guise, but treach'rous work—
The men, their aims, their daily irk;
These be the burden of our Muse.*

LXVIII. THAMES VALLEY.

In that pleasure-haunted Valley grows a strong Association,
Healthy sapling with no mediæval twigs;
With the boldest in the country it has taken foremost station,
Sinco its planting by the ever-genial Higgs.

Always social and progressive

It has entered on successive

Warlike hazards that have addled many wigs.

For when Secretary Harvey said, "We meet to-night at Richmond,"

Like the chickens to their meek, maternal hen,
Every brother toddled thither, for it was a pleasure which meant

Mutual benefit to men and brother men.

Till at last they made him Chairman,

Did these pharmaceutical mermen;

So to clever Woolcock Harvey gave the pen.

But one must not be forgotten, e'en the irrepressible Palmer,
Whose good humour nothing untoward can vex;

Thus the subsequent progression made the friendships ever warmer.

Though the pharmaceutical problem might perplex

Many an inexperienced younker,

Not so Parrott, Peake, or Bunker,

Or a Clement, or a Blanchford (christened Rex).

They have toyed with legislation both designing and destructive,

They've besieged the carnal Cutters in their camps;

They have learned to be opticians, and they listened to instructive

Lectures writ by oil of midnight-burning lamps;

And their latest aberration

Is to stir the Federation

Into freeing us from foolish Medicine Stamps.

Marriages.

BUNTING—OWEN.—At St. Andrew's Church, Sharrow, on August 5, by the Rev. F. G. Scovell, Vicar, Alfred Worsley Bunting, to Ellen, eldest daughter of the late Mr. George Bargh Owen, chemist and druggist, Sheffield.

COOK—MILLINGTON.—At St. Peter's, Maritzburg, Natal, on July 6, William Cook, chemist and druggist, late of Runcorn, Lancs., to Kathleen Emily, only daughter of Mr. Greenway Millington, of Runcorn.

PHILP—HARRINGTON.—At St. Peter's, Ealing, on August 3, by the Rev. Horace Cossar, of St. James's, Piccadilly, assisted by the Rev. F. H. Voigt, William John Ignatius Philp, pharmaceutical chemist, eldest son of the late Rev. Christopher Philp, of Gosport, to Edith Maud, eldest daughter of Mr. John F. Harrington, member of the Pharmaceutical Council, of Rochford, Westbury Road, Ealing.

THOMAS—GERBER.—On July 4, at St. Paul's Church, Durham, by the Rev. H. Robinson, William J. H. Thomas, chemist and druggist, of Berea, Durban, to Betty Adelaide Gerber, formerly nurse, New Somerset Hospital, Cape Town.

Deaths.

ADAIR.—At Workington, Cumberland, on August 4, Mr. Elliot Adair, chemist and druggist, aged thirty-eight. Mr. Adair was for five years in the Plough Court pharmacy of Messrs. Allen & Hanburys, Ltd., being senior assistant in the retail department. He died suddenly of heart-failure while on holiday, and his death will be much regretted by a large circle of friends.

COOKE.—At Leamington Spa, on August 4, Mr. Francis Hewlings Cooke, chemist and druggist. Mr. Cooke was many years in business at Redcar, Yorks, but had resided at Leamington Spa since his retirement about four years ago. He was a leading Wesleyan, and had held almost every office open to a layman.

HEATH.—On August 8, at 36 Cavendish Square, W., Mr. Christopher Heath, Emeritus Professor of Clinical Surgery in University College, London, and consulting surgeon to University College Hospital, and a former President of the Royal College of Surgeons of England, aged seventy. Mr. Heath's books are well-known guides to surgery, his manual of "Minor Surgery" being one with which many chemists are familiar.

HUGHES.—At Lodge Lane, Liverpool, on July 28, Mr. George Hughes, chemist and druggist, aged eighty-nine.

LOWTHER.—At 150 Somers Road, Southsea, on August 7, Mr. William Lowther, chemist and druggist, aged fifty.

LUNN.—At 31 Westgate, Grantham, on August 6, Mr. Thomas Lunn, chemist and druggist. Mr. Lunn, who died after a brief illness, had carried on business at Grantham for almost half a century.

MAWSON.—At Alnmouth, on August 2, Mrs. Mawson, widow of Mr. John Mawson, chemist, aged eighty-three. Mr. Mawson was a member of the firm of Messrs. Mawson, Swan & Morgan, of Newcastle-on-Tyne, and he lost his life in an explosion of nitroglycerin in 1867. Mrs. Mawson's life has been distinguished by philanthropic sympathies and active work in many good causes.

THOMAS.—At Swansea, on August 1, Mr. Evan Thomas, chemist and druggist.

Recent Wills.

BULLOCK.—Mr. John Lloyd Bullock, of 3 Hanover Street, Hanover Square, the last of the founders of the Pharmaceutical Society, and of the firm of Messrs. J. L. Bullock & Co., who died on June 4, 1905, aged ninety-three, bequeathed by his will of April 15, 1904, 50*l.* to the Pharmaceutical Society's Benevolent Fund, 20*l.* to the Worcester Infirmary, 20*l.* to the Worcester Society in London, and 20*l.* to Sarah Acland's Home, Oxford. He also bequeathed 40*l.* each to Mrs. Hyatt, Arthur Hyatt, and William Orme, 30*l.* to his nephew Edmund Bullock, 20*l.* to Harry Horneblow, 200*l.* each to Alice and Fanny Woodward and the two children of Elizabeth Concy, 600*l.* in trust for John Gardner for life with remainder to Mrs. Newman and her issue, and the residue to his nephew Mr. Frederick Woodward, of Park Farm, Kempsey, Worcester, who has valued the estate at 2,527*l.* 6*s.* 9*d.* gross.

MARSH.—The will of the late Mr. Edward Robert Marsh, chemist and druggist, 6 Central Parade, West End Lane, West Hampstead, London, N.W., who died on May 15, has been proved at the Principal Probate Registry by his widow Mrs. Emma Sophia Marsh, and Mr. Frederick Ellis Willcocks, 274 Hagley Road, Birmingham, commercial traveller, the executors. The gross amount of the estate is 2,497*l.* 7*s.* 1*d.*, including net personality 2,148*l.* 10*s.* 10*d.*

PASMORE.—Letters of administration to the estate of the late Mr. Frederick Rich Pasmore, pharmaceutical chemist, and a BOLL scholar, of 133 St. George's Street, E., who died on February 21 at Camberwell Infirmary, have been granted to his widow Mrs. Victoria Alma Pasmore. The estate is valued at 37*l.* 19*s.* 8*d.*

PAPER WRAPPERS FOR CHEMISTS' WARES.—The Hamburg Customs authorities have recently decided that wrappers of imitation-parcament paper intended for wrapping up bottles of medicines, etc., imported in blocks or in packets of loose sheets, with a printed advertisement on the outside, are to be dutiable on importation at the rate of 12*m.* per 100 kilos. (0.65*d.* per lb.).

Observations and Reflections.

By XRAYSEB.

The Federation

has never been fully appreciated. It has been criticised as superfluous, as frivolous, and as supine, but nobody hitherto has realised that it has to be reckoned with as a peril. The report of its meeting at Brighton, however, can hardly be examined without alarm. Out of the sixty gentlemen assembled at the Métropole forty are described as "accredited delegates," and they figure as representing the chemists of London, Edinburgh, Glasgow, Manchester, Leeds, Sheffield, and a dozen other places. As a matter of fact, not a tenth part of the chemists carrying on their businesses in those cities had the remotest idea that they had any delegates at Brighton or anywhere else. They were daily breaking packets of "Daisies," Steedman's, and Beecham's, sublimely unconscious that these forty reformers were planning to go to Somerset House in their delegatorial capacity with the object of making it illegal to continue this practice. Luckily that trip has been deferred for the present, partly by presidential prudence, but principally because of a feud between the menders and the enders of the Medicine-stamp Acts. But a united meeting and an adventurous president may coincide at any time, and then if the Board of Inland Revenue should happen to be caught in a tinkering humour, serious and irreparable injury may be done to the whole trade by a little party of irrepressible pharmacists who have got into the habit of regarding themselves as accredited delegates.

A Hearty Cheer

is reported to have greeted the defiance of the Privy Council at the Pharmaceutical Society's meeting at Brighton. The chemists at that meeting "were not going to take it lying down"; the "it" being the omission of the three poisons by the Lords of the Council. Well done, valiant meeting. We others, not knowing what else to do, were taking it, horizontally or vertically. Like Falstaff, we are cowards by instinct in the presence of superior force. But we are still capable of worshipping and following valour. We will march if the Brighton heroes will only show the way. They have hung out antifebrin, sulphonol, and the soluble salts of oxalic acid on the battlements and ticketed them as the general did his boots in a famous old play:

Who dares these poisons to displace
Must meet Bombastes face to face.

The challenge was uttered and endorsed by the hearty cheer in the presence of the Brighton reporters, and honour calls for its justification. Our champions will surely not be content with showing off at the Métropole, and then retiring to their pharmacies. What is to be their next move?

"Awake's" Policy

is worthy of careful consideration. There are a dozen or a score of more or less popular articles usually sold by chemists on which we must either be undersold or make an actual loss. To keep a stock of these, especially if bought at the best prices, a capital of at least 50% lies dead, and they contribute nothing to rent, gas, or service. None of the things is indispensable, and a few of them are charged at such extortionate prices that if we were delicately scrupulous we should decline to deal in them under any conditions, regardless of the profit question. It is not fair to abuse the proprietors of these products for the financial barrenness of the retail trade in them. They fixed a sufficient margin of profit which the retailers have thrown aside. But this does not affect the actual conditions. There are stores which

delight in supplying the public with the articles at or under cost-price, and the proprietors do not think it necessary to interfere. Is it wise to compete in such insane methods? Cocker, Adam Smith, and the Inspector-General of Bankruptcy would certainly reply in the negative, and "Awake" adds "Probatum" to their theoretic arguments. The contention on the other side is that you will drive customers to the cutters' shops unless you meet their convenience. But they will go to the cutters sometimes in any case, and you will not lose them permanently if the rest of your business is conducted well; if it is not you will lose them anyway.

Water of Magnanimity

referred to in last week's French News was unknown to me and excited my curiosity, especially in regard to its designation. So guided by the allusion I looked up Lemery's "Pharmacopée Universelle" and there found the formula. It prescribes—

Formicarum man. ij.
Spiritus vini lb. ij.
(Man.=manipulus, a handful.)

The ants were to be crushed in a mortar and digested in the spirit until they were dissolved or converted into a liquor. This was to be distilled and aromatised with canella. The dose was from one to two drachms, and it was recommended as a stimulant, an aphrodisiac, an antidote to poisons, and to dissolve and resolve the cold humours. Lemery adds that its name had been given to it because of its great virtues. This commonplace explanation is rather disappointing. It does not appear whether Lemery himself gave the name to the preparation. In some other of his etymologies he is ingenious. For example, he solves the mystery of the derivation of "menstruum" from *mense* by assuming that it was a solvent which would complete its work within a month. "Syrup" he derives from Greek *suro*, to draw, and *opos*, juice, though he also mentions the Arabic word which is now recognised as the true source.

The Preface

to Lemery's "Universal Pharmacopœia" reveals a condition of pharmacy curiously analogous to that which we complain of to-day. Indeed, Nicholas Lemery might well have been chosen to address one of those modern pharmaceutical meetings designed to inform reporters and the public how great and good pharmacists are, and how unjustly treated. "Although pharmacy is only a part of medicine," he says, "it is of vast extent and importance. It has for its object all sublunary bodies, and it imitates by its operations the most beautiful and the most curious functions of Nature. Nothing appears excluded from its domain. Not content with what it finds in the air, on the earth, or in the waters, it seeks in mines and scours the abysses to obtain what it believes may be useful; it analyses substances, discovers their principles and their qualities, separates the pure from the impure, chooses, prepares, collects, and makes compounds of marvellous remedial value; it is, in short, the right hand of Medicine, which it often directs in prudence, and which without its aid would be grievously deficient in the means of curing diseases." Evidently Lemery had the requisite rhetorical outfit for a British presidential chair. Then he goes on to state that while all this science and service was offered to the public, it was shamefully permitted that persons who had perhaps never even read a book of pharmacy or practised any of its operations could buy or hire a "privilege," engage an assistant who perhaps just knew how to compound some of the common remedies, keep open shops, and sell medicines, which they often did at cut prices to attract custom, without caring about the quality of the drugs they employed. And he urges on the authorities the consideration of how injurious this laxity must be to the real interests of the public.

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Educational Progress.

THERE are no great changes to record in the system of education since the last Educational Number of THE CHEMIST AND DRUGGIST, although several important changes are foreshadowed. The scheme for the establish-

ment of a College of Technology on the model of the German Charlottenburg has advanced a stage, but it should be noted that the committee which has been inquiring into the matter has not found the serious defects in the present system of higher education that had been anticipated. The want of co-ordination is perhaps the greatest fault, while improvements in the teaching of certain subjects, such as metallurgy, have been pointed out. The large gift of money that has been offered to the Government to found the College will be used in promoting an amalgamation of the existing higher-education institutions, with provision for extension in those departments in which defects have been pointed out. The site of the new buildings will be at South Kensington, the Royal College of Science forming the nucleus. The disintegration of the Victoria University is now completed. Leeds and Sheffield have both received charters, and are now separate Universities. The change as regards Sheffield is so recent that some of the arrangements for the next session are a little uncertain, but we have taken steps to verify the information we give as regards the teaching of medicine, dentistry, science, and pharmacy. Liverpool and Manchester Universities are exhibiting a strenuousness which bodes well for the future. The former University has now in connection with it a well-equipped veterinary school, and possesses the advantage of having as materia-medica demonstrator and pharmacy lecturer a well-known pharmacist—Mr. Prosper H. Marsden. Last year we chronicled the establishment of a course of study for the B.Sc. in pharmacy at Manchester and Aberdeen, but the time is yet too short to judge whether the offers of these Universities are likely to be largely taken advantage of. At Liverpool an amalgamation of the two Schools of Pharmacy is in the air, and is not unlikely to be an accomplished fact before the issue of our next Educational Number. The Sheffield College of Pharmacy, which was carried on by Mr. J. W. J. Turner, has been discontinued, and from Blackburn we learn that the Minor course which had been established at the Technical School has had to be abandoned owing to lack of support. On the other hand, encouraging reports are given from other parts of the country as regards local pharmaceutical education. Exeter, for instance, is making a notable effort to show that Mr. H. Wippell Gadd's concurrent curriculum is a workable one. The Pharmaceutical Society is still considering the scheme for the unification of Professional Preliminary examinations, although this should not prevent the present list of accepted examinations from being brought up to date. Judging from the entries at the last Minor examination, it does not seem as though the drug-trade was being shunned quite so much as pessimists would have us believe, and a gratifying feature of the last pass-list was the higher proportion of successful candidates. There are different ways of accounting for the improvement, but we hope the true one is that the examination is tending to perfection as regards meeting the business requirements of the drug-trade. There is a long road to be travelled yet before the ornamental parts of the present syllabus are eliminated or made subservient to those matters which more nearly concern the business of a chemist and druggist, but it is to be hoped that a brighter day is dawning for the unfortunate candidates who are at present expected to possess a depth of knowledge in pure scientific subjects that would more befit a candidate for the degree of bachelor of science. A laboratory of applied pharmaceuticals has been fitted up at the Society's house in Bloomsbury Square, which it was thought would be available for teaching practical pharmacy to students in the early part of their career, but, judging from what has

been done up to now, the laboratory is designed for the use of students who have already been judged to be practical pharmacists by the test of the Major examination. The advocates of a compulsory curriculum for pharmacy students have not shouted quite so loudly during the past year, although from a purely theoretical point of view the Government Visitors to the examinations still insist on the necessity of such a curriculum. As the Visitors' recommendations are chiefly matters of statistics, it will be interesting to note whether a curriculum will still be advocated in the face of the improved pass-lists. A feature of the pharmaceutical year has been the establishment of the Fairchild scholarship and prizes, in which, for the first time in the annals of pharmacy in this country, the candidates are examined in business knowledge. We publish the portraits of five out of the six successful candidates in another part of this issue, and heartily congratulate the winners on their good fortune. We shall watch with interest the career of Mr. Scott, the first Fairchild Scholar. This brief mention of scholarships would not be complete without a reference to the fact that the Salter fellowship has this year been conferred on Miss Renouf, who has thus the distinction of being the first woman pharmacist to hold this valuable research scholarship. To the younger generation of students, to whom the greater part of the educational information in this number is addressed, we offer the advice: strive to attain perfection, even under the disheartening conditions imposed by rigid examinations. The mental discipline required in preparation for examinations is the least harmful part of a system that is doomed to disappear before long. The wisest educational authorities are awakening to the fact that uniformity in educational attainments tends to cripple that originality and resource which it should be the aim of education to foster.

Antipodean Trade.

An encouraging tale is told in the record of Australia's trade for 1904, which has just been issued. This is the second annual return treating the Commonwealth as a trading entity. The difficulties attending the systematisation of the collation of returns from the various States, which until two years ago imposed different rates of duty and followed different schemes of classification, seem to have been overcome with the preparation of the first volume, for the second has followed it with commendable promptitude. One word of criticism regarding the general plan followed. We miss one feature which is usually found in published annual statements of trade, and to which any such book owes more than half its practical value. In the volume before us the details of imports and of exports to and from the several countries deal only with the year 1904. In all other yearly trade returns of which we have cognisance the details for a series of years are given, so that the loss or gain by individual countries may be compared and the moral pointed. At the end of the book, it is true, the different countries are treated separately and retrospective figures are given, but this method does not rise to the value of that pursued by compilers who give the figures for a series of years in the general table. Another point which seems strange is that in many cases the value of goods upon which duty has been paid has exceeded the total value of imports in that class. Last year, for instance, Australia imported medicines to the value of 202,779*l.* and paid duty on 213,640*l.* worth of medicines. We presume the explanation of this seeming large-heartedness by Australian merchants is that duty is collected, not upon goods imported, but upon goods taken from bond.

Upon the general position of Australian trade we would note only a very few points. The balance of trade—so-called—is very much in Australia's favour. Last year she exported value for over 5,000,000*l.* worth more than she imported. This fact may be interpreted and inferences drawn according to whichever school of economy the reader offers allegiance. We find that last year Australia imported duty-free merchandise worth 648,000*l.* more than she did in 1903, while her bill for dutiable merchandise fell by one and a half million. It is a fair inference that her policy of developing manufacturing industries is having its effect; that increasing purchases of raw materials, and their transformation into saleable merchandise by Australian labour, are restricting the need for importing many things. It is a salient fact that while the total value of Australian imports was practically the same in 1903 and 1904, Great Britain's contribution for the latter year was more than 2½ million pounds worth greater than in 1903, equalling an increase of quite 13 per cent. The share of the United States fell during these two years from nearly 6½ millions to little more than 4½ millions of pounds sterling—a decrease of 28 per cent. It may be remarked in this connection that the Australian Commonwealth is the only great British colony where a preferential tariff in favour of British goods is no part of the fiscal system. Descending from the general to the particular, we find that Great Britain's contributions last year in individual classes which are pertinent to the interests to the drug and chemical trades were as follows :

	£	p.c. of total
Medicines	140,829	= 70
Perfumery	32,924	= 60
Photographic plates, films, and paper	30,577	= 92
Drugs and chemicals	513,218	= 62
Alkalies (soda)	75,183	= 83
Malt extract	1,872	= 91
Gums	3,454	= 27
Gelatin	10,542	= 67
Lime-juice	4,519	= 83
Aërated waters	4,820	= 37

The only items in the group in which the United Kingdom does not have preponderance are in gums and aërated waters, and it could not be expected that in these it should be otherwise. Any estimate of British exports should, of course, take cognisance of the fact that British "exports" and British "manufactures" are not synonymous terms. The quantity of foreign manufactures brought into England and credited in official returns as British exports without indication of primary origin cannot be accurately computed. Articles in which Australian imports from Great Britain showed substantial increase last year included ammonium carbonate, cream of tartar, gums, medicinal preparations, insecticides, and toilet-soaps. In the two last mentioned the increase over the preceding year was very great. Here are the figures :

	1903	1904
	£	£
Insecticides	18,526	30,314
Toilet-soaps	23,678	44,782

Departments in which a decrease is exhibited were potassium cyanide and lime-fruit juice and fruit syrups. There has been a great falling-off in Australian purchases from the United States, the most important of foreign countries in the markets of the Commonwealth. Decreases are to be recorded in the values of medicines, perfumery, tartaric acid, soda alkalies, dyes, soaps, and aërated waters from the United States for 1904. The only article in our group in which increase may be found is insecticides, and America's increase is only one-third as great in specific value as that of Great Britain in the same article. Germany is the only other foreign country which sells to Australia value for over 1,000,000*l.* per annum. Last year's total was 2,655,855*l.* Calcium carbide, cream of tartar, and perfumery were

bought from Germany in greater quantities during 1904 than during 1903. The value of the first-named doubled—a natural result of the increasing use of acetylene as an illuminant in our ocean colonies, and the Board of Trade restrictions which have caused the cessation of carbide-manufacture at Foyers. On the whole, the international situation in the Australian markets is highly satisfactory for Great Britain. With a fair field and no favour, without any artificial fiscal preference, British makers are able to give good accounts of themselves in the Antipodean markets. John Bull has wakened up.

Amending the Ordinance.

THE Transvaal Pharmacy Ordinance has not been left long in undisturbed enjoyment of its pristine virtue. The Ordinance was only gazetted in August last year, but already the amenders are on the warpath. The general dealers of the Colony have become alarmed at the threatened restriction of the sale of poisonous proprietary medicines to chemists, and there are apparently many agricultural interests involved. By last mail from Pretoria we learn that a draft Ordinance to amend the Medical, Dental, and Pharmacy Ordinance, 1904, is to be introduced into the Transvaal Legislative Council during the present Session. It seeks to amend Section 23 of the Ordinance (see *C. & D.*, July 30, 1904, pp. 152 and 153) by adding the words "or elsewhere" after "in this Colony"—a necessary amendment, for the examination, according to the present reading of the section, is restricted to persons who have served a regular apprenticeship to a registered chemist in the Transvaal Colony only. By amending Section 35 it is sought to put the onus of publishing the Register on the Colonial Secretary instead of on the Council. Powers are likewise sought to transfer poisons from Part I. to Part II. of the Schedule, and *vice versa*. An endeavour is to be made to repeal Sections 51 and 52, and to substitute the following :

Notwithstanding anything in Section 50 contained the Resident Magistrate of any district may issue a certificate to an importer or general dealer carrying on business within such district authorising him to keep for sale and to sell poisons for any mining, agricultural, or industrial purpose; and, further, may issue a certificate to any person resident in the district authorising him to keep for sale and to sell poisons prepared for the destruction of wild animals or vermin or for the treatment of scab or other diseases in animals or for fumigating plants or for treating insect pests or plant disease. Every such certificate shall state that the holder thereof is a fit and proper person to deal in such poisons as are mentioned in this section. Every such poison as is mentioned in this section shall be kept for sale and sold in quantities of not less than one pound in weight or in unbroken vials properly corked and sealed and labelled with the name of the article and the word "poison," and bearing the name of the person by whom such article was in the first instance prepared for sale. No such importer, general dealer, or other person holding a certificate of Resident Magistrate as aforesaid shall sell or dispose of any poison for the purposes mentioned in the last preceding section unless he is satisfied that the person desiring to obtain the same requires it for any such purpose, and it shall be the duty of every such importer, general dealer, or other person aforesaid to require information in writing from the person desiring to obtain such poison as to the particular purpose for which it is required, and every such person shall give such information on such request.

Another section is proposed to give permission to resident magistrates to issue certificates to general dealers to sell "such preparations known as 'patent medicines' or 'Dutch medicines' which may be prescribed from time to time by the Lieutenant-Governor, and named in a list published in the 'Gazette.'" Power is likewise to be asked under Section 56 (the penalties section) to impose a sentence of imprisonment, either in lieu of or in addition to any fine that may be imposed, when a person has been found guilty of contravening Section 50 by unlawfully selling "gum opium extract of opium poppies or prepara-

tion of poppies." The amendments proposed are not very drastic, and the Government took the precaution to consult the Medical and Pharmacy Boards on each point, so that there will probably be little open opposition. Doubtless the Lieutenant-Governor will seek the advice of the leaders in pharmacy and medicine before compiling the list of proprietary articles that may be sold by unqualified persons. The opium restrictions are, of course, an outcome of the scare which resulted in the introduction of Chinese labour to the Rand. The amicable relations that exist between Government officials and the representatives of medicine and pharmacy in the Transvaal make it fairly certain that nothing will be done without due consultation and consideration on both sides. The strenuous seven whose portraits are given on p. 321 may be relied upon to see that pharmaceutical justice is done.

Inland Revenue.

The forty-eighth report of the Commissioners of Inland Revenue has several interesting features. There was, for instance, 5,461,653 proof gals. of spirit submitted to methylation in the year ending March 31, which is a record quantity. The Excise duty on saccharin-manufacture in this country was 10,674*l.*, against 906*l.* the previous year. In the table of Excise-licences we note that there were 40,129 patent-medicine licences issued, the net receipt of duty being 10,030*l.* Chemists keeping or using stills numbered 922, the duty produced being 8,568*l.* There are some other features to which we hope to refer in a future issue.

British Association Meeting.

By OUR SPECIAL CORRESPONDENT.

THE "Official Party" left Southampton on July 29 on board the Union-Castle R.M.S. *Soxon*. A large number of members, including some of the officials, had already left on the preceding Saturday by the R.M.S. *Kildonan Castle* and the intermediate steamer *Durhom Costle*. The first-saloon passengers on the *Soxon* number about two hundred, and the great majority of these are connected with the Association; consequently, there was a great renewal of old acquaintanceships at Waterloo and on board, and there was little of the general strangeness generally associated with the beginning of an ocean-trip.

London was left in good weather, but when the *Saxon* left Southampton, shortly after five o'clock, there was a slight fall of rain and a fair breeze was blowing. The rain did not last long, however, and, as the sea was far from rough, the weather conditions were by no means unpropitious. None but the very poorest of sailors suffered any discomfort, therefore, and there was a very large muster at dinner in the evening. Most of the evening was devoted to exploration of the ship's geography, etc., and "early to bed" was the rule, most of the company having had a busy time previous to their departure, and many having had to perform a long journey the preceding night.

The first Sunday of a trip to the Cape is spent in "The Bay," and is very often a day of misery and penance; but the British Association were specially favoured, experiencing a "calm sea and prosperous voyage" which all hope may continue throughout the remainder of the journey. After breakfast (8.30) there was a general hunting-out of deck-chairs and search for comfortable corners, and soon the promenade deck presented quite an animated appearance. In the forenoon service was conducted in the first saloon, in the evening the second saloon served as meeting-place. The muster did not come up to that taking place at meal-times.

On Monday the weather continued eminently satisfactory, and, the restraint imposed by the first day of the week being now removed, the deck became distinctly livelier. After breakfast various games were found prepared on deck,

and many of the travellers, of each sex and of every type, were soon indulging in the diversions thus provided. Evidence of the presence of a learned body on board was not entirely wanting, but it was not obtrusive; it was visible in the quantity of serious and scientific literature which was observable intermixed with the fiction and the popular magazines which constitute the bulk of the printed matter evident on a liner; it was audible in the discussions which from time to time took place in groups which foregathered in the smoking-room, in some corner on deck, or round the tables at meal-times. Officials and habitual travellers declare that they never, on any previous trip, heard so much talking on board ship! It was evident from the printers' proofs visible here and there that quite a number had brought serious work with them, either to improve the



GROUP TAKEN ON BOARD THE "SAXON."

Back row (from left to right): Professor Arnold, —, Professor Haliburton, Dr. M. O. Forster, Professor Sydney Young, Professor Sjögren, Mr. Hall, Dr. Kimmins.
Middle row: Professor Dixon, Lady Crookes, Mr. Beilby (President), Sir William Crookes, Miss Rich.
In front: Dr. Findlay, Dr. Hugh Marshall.

shining hour throughout the voyage, or, more generally, to finish off before reaching Madeira what the hurried departure had not allowed to be completed before leaving home. Most industrious among these was Dr. Murray, busy on dictionary slips.

In its corporate capacity the Association is practically not at all in evidence. There are one or two notices posted affecting the sectional officers, but there is no indication of any sort of formal meeting taking place; there are, however, rumours of an impending astronomical exposition, to prepare us for the changes in the appearance of the sky which are impending as we travel south.

Section B (Chemistry) does not muster very strongly on board the *Soxon*. Some of its representatives (including Professor G. G. Henderson, of Glasgow, who is acting as Recorder in place of Professor Pope, who unfortunately has been unable to come) have left by the earlier boats. Those present are the president, Mr. G. T. Beilby (Glasgow), accompanied by his son; the retiring President, Professor Sydney Young, F.R.S. (Dublin); Vice-Presidents, Sir William Crookes, F.R.S., accompanied by Lady Crookes; Professor Harold B. Dixon, F.R.S.; Secretary, Dr. M. O. Forster, F.R.S. (South Kensington); Dr. Hugh Marshall, F.R.S. (Edinburgh); Dr. Alex. Findlay (Birmingham); Miss F. Rich. Allied or special branches are represented by Dr. Haliburton, Professor Arnold (Sheffield), Professor Sjögren (Stockholm), Dr. Kimmins, Mr. Hall (Rothamsted).

MALAGA WINE is used in the United Kingdom as a colouring for whisky. It is said to be more mellowing and "creamy" than saccharum ustum, and it should be noted that adding colourings to spirits is not adulteration.

INFLUENCE OF SOIL ON TOBACCO.—Light-coloured soils generally produce light-coloured tobaccos, dark soils dark tobaccos; clays produce dark brown; a red, sandy land yellow or bright-coloured leaf. Warmth conduces to aroma, coolness to the absence of it.

EDUCATIONAL INFORMATION.

In this series of articles we deal with the legal requirements for registration under the Pharmacy, Medical, Dentists and Veterinary Surgeons Acts, describing the Examinations and the Education necessary to pass them, while Scientific Education and Qualifications are also considered.

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The Practice of Pharmacy.

A CHEMIST to the man in the street is a person who keeps a druggist's shop or a pharmacy, but the man in the street as easily believes that every man who keeps a chemist's shop is a chemist. The law does not say so, but it has been so carelessly drawn that it permits any body of persons registered as a company to call themselves "chemists." That method of "qualification" is not the subject of this article, nor do we treat until later the position of the analytical or professional chemist, who is not connected with pharmacy and keeps no open shop.

Two sets of Pharmacy Acts regulate the keeping of chemists' shops in the United Kingdom, one set being for Great Britain and the other for Ireland. They are not reciprocal, Great Britain being in this matter a foreign country to Ireland, and *vice versa*. Dealing first with

GREAT BRITAIN.

we note at the outset that the privileges conferred by the Pharmacy Acts upon those who qualify according to the Acts consists of two things solely—viz., (1) the right to use the titles chemist and druggist, dispensing chemist, or chemist, or druggist, and (2) the right to sell or keep open shop for retailing, dispensing, or compounding poisons. These privileges are granted by the Pharmacy Act, 1868, but medical men have the same rights, and veterinary surgeons, wholesale druggists, makers and sellers of patent medicines (strictly so called). and certain other persons

have their prior rights reserved. An Act of 1852 regulated the qualifications of pharmaceutical chemists, this being a higher qualification than that of chemist and druggist, but the only additional privilege they have apart from title is exemption from jury-service in England and Wales. The steps taken

TO BECOME A CHEMIST AND DRUGGIST

lead on to the higher qualification, which, however, is purely voluntary, may be briefly stated as follows:

1. Pass a preliminary examination in English grammar and composition, Latin, a modern foreign language, arithmetic, algebra, and Euclid, recognised by the Pharmaceutical Society.

2. Register as a student of pharmacy, and be so registered for at least three years, or otherwise for three years be practically engaged in the translation and dispensing of prescriptions.

3. On attaining the age of twenty-one years pass the Minor examination in botany, chemistry, and physics, materia medica, pharmacy, practical pharmacy and dispensing, and prescription-reading.

The Pharmaceutical Society of Great Britain is entrusted with the examination of candidates and their registration when they pass the examinations. There is a Board of Examiners for England and Wales, meeting in London, and one for Scotland, meeting in Edinburgh, but candidates have the right to choose which Board they may be examined by,

2. *English Language and Literature*.—(a) Grammar. Passages may be set for parsing, analysis, paraphrase, and explanation. (b) Scott, "Ivanhoe." (c) Shakespeare. Either "Julius Cæsar"

or "Merchant of Venice." (d) "Poems" of England, by George and Sidgwick (Macmillan). (e) Essay. To pass in this section candidates must satisfy the Examiners in two of the divisions (a) to (e), one of which must be either (b) or (c) or (d). Every candidate must pass in dictation. The quality of the handwriting and the spelling will be taken into account throughout the examination.

3. *Latin*. 4. *French*. 5. *German*.—Candidates must satisfy the Examiners in two papers in each language. These include—(a) translation into English of one or more unprepared passages; (b) translation of English sentences to illustrate common constructions; (c) grammatical questions; (d) translation of passages from set books, with general questions thereon; (e) additional unprepared translation. Candidates must pass in (a), (b), (c), and either (d) or (e).

6. *Algebra*.—To easy quadratic equations involving one unknown quantity (including fractions, extraction of square root, theory of indices, simple equations, and problems producing simple or quadratic equations).

7. *Geometry*.—Including the subject-matter of Euclid, Book I., Props. 4-6, 8, 13-16, 18, 19, 26-30, 32-41, 43, 47, 48, and Book III., Props. 3, 14-16, 18-22, 31, and certain constructions. A knowledge of the forms of the simpler solid bodies is also assumed.

THE CAMBRIDGE LOCAL EXAMINATIONS (senior and junior) are held in December of each year. A list of local centres is given in the "Regulations," which may be obtained from Dr. Keynes, Syndicate Buildings, Cambridge. Each candidate is required to pay a fee of 1*l.* to the University, and also the local fee charged by the committee at the place of examination. The paper in religious knowledge must be taken by all candidates, unless their parents or guardians object to their examination in that section. Every junior student is required to satisfy the examiners in writing from dictation. A certain number of marks will be assigned to handwriting. Composition will be taken into account. At the examination commencing on Monday, December 11, 1905, pharmaceutical candidates may take the subjects mentioned in the following sections:

1. *Arithmetic*.—Including contracted methods of multiplication and division, and the metric system, but excluding recurring decimals and cube root.

2. *English Language and Literature*.—(a) English grammar, including parsing and the analysis of sentences. (b) Shakespeare, "Twelfth Night." (c) Scott, "Lay of the Last Minstrel." (d) Scott, "Ivanhoe." To pass in this section students must satisfy the examiners in (a) and either in (b) or in (c) or in (d). No student will be examined in more than one of the three—(b), (c), (d).

3. *Latin*.—Papers will be set containing passages from Caesar, "De Bello Gallico," I., and Virgil, "Æneid," II., for translation into English. No student may take both authors.

4. *French*.—Passages will be given for translation into English from Mérimée, "Colomba."

5. *German*.—The selected book for 1905 is Hauff, "Das Wirthshaus im Spessart" (omitting "Das Kalte Herz").

N.B.—In sections 3, 4, and 5 the papers will include: (1) Questions on grammar and parsing; (2) passages for translation from the set book; (3) one or more easy unseen passages, a vocabulary of the less familiar words being supplied; (4) easy English sentences for translation into the foreign language. Questions may also be set on historical and geographical allusions, and on the metre of verse subjects. Without a fair knowledge of accidence a student cannot pass.

6. *Algebra*.—Candidates will be required to satisfy the examiners in definitions and explanations of algebraical signs and terms; addition, subtraction, multiplication, and division of algebraical quantities; theory of indices; highest common factor and lowest common multiple; extraction of the square root; the solution of easy equations of the first degree (including simultaneous equations) and questions producing such equations, and the solution of easy quadratic equations involving one unknown quantity. Questions may be set on graphs, and when such questions are set squared paper will be provided. The paper will also contain questions on the higher rules which may be attempted.

7. *Euclid*.—The geometry paper will consist of two parts, each containing questions on practical and on theoretical geometry, on the lines recommended by the Mathematical Association. A full syllabus of the requirements will be found in the "Regulations," to which we must refer intending candidates.

There are three examinations for matriculation—one in January, one in June (or July), and the third in September of each year. Every candidate must pay a fee of 2*l.* The examinations are held in London and elsewhere. Candidates at centres other than London are required to pay an additional local fee, varying in amount from 1*l.* to 3*l.*

LONDON MATRICULATION.

Copies of the "Regulations for Matriculation" may be had gratis and post free on application to the Principal, University of London, South Kensington, S.W. Pharmaceutical students are required to show a competent knowledge in each of the following five subjects, according to the details specified in the "Regulations" under the several heads:

1. English.
2. Elementary mathematics, including arithmetic, algebra to progressions, and Euclid, Books I.-IV., with simple deductions.

3. Latin.

4. French or German.

5. Elementary mechanics; or elementary physics—heat, light, and sound; or elementary physics—electricity and magnetism; or elementary chemistry; or elementary botany.

CENTRAL WELSH BOARD.—Written examinations will be held in 1906, commencing not earlier than July 11. The Junior examination is the most suitable one for chemists' apprentices in Wales. Applications for entry-forms must reach the Clerk of the Board, Cardiff, not later than May 1, 1906, and must be forwarded to him, duly filled up and accompanied by a fee of 5*s.*, not later than May 12. The examination is in six sections, viz.:

(A) Comprising Scripture knowledge, English language, English literature, and English history.

(B) Arithmetic and mathematics.

(C) Latin, Greek, Welsh, French, Spanish, German, and Italian.

(D) (E) (F) These sections include scientific and technical subjects.

The Board state that English composition, English language, arithmetic, algebra and geometry, Latin, and one modern language are all that is necessary for those who wish to be registered by the Pharmaceutical Society, and they arrange accordingly for such students.

Candidates for the Board's examination must be pupils in a county school established by the scheme under the Welsh Intermediate Act of 1889.

The Preliminary examination best suited for chemists' apprentices in England and Wales is that of the College of Preceptors, but those who are able to pass the London University examination should do so, as it carries more weight and admits to the degrees of the University. Chemists' apprentices in Scotland, or those intending to be, will find the Leaving certificates of the Scotch Education Department, Chambers Street, Edinburgh, well worth taking; otherwise the Educational Institute's examination should be passed, but those who desire to avail themselves of the Carnegie Trust should pass a Preliminary examination for graduation in science at a Scotch university and use this for registration as students of pharmacy.

We strongly advise all to pass an examination in the necessary subjects before beginning apprenticeship, otherwise they will find it difficult to keep up the school subjects or get further coaching in them and adequately do their duty to their employers.

Minor or Qualifying Examination.

As already explained, this examination can only be taken by those who have been engaged for three years in the dispensing and translation of physicians' prescriptions. The official regulations do not state where this experience is to be obtained, but it is necessary that a chemist and druggist, pharmaceutical chemist, or medical practitioner should sign a declaration that the candidate has the requisite three years' experience. The candidate must also be twenty-one years of age, and must produce the registrar's certificate of birth, and pay the fee of 10*l.* 10*s.* to Mr. Bremridge, 17 Bloomsbury Square, W.C., at least fourteen days before the last day of the month in which the examination is held—January, April, June, and October. The requisite application-forms should be obtained a month before.

The subjects of the examination are briefly as follows:

Botany.—Classification, including sub-classes and natural orders of angiosperms and recognition (fresh or dried) of forty-five specified medicinal plants. Morphology and anatomy of all parts of the plant, including recognition, by the microscope, of plant-structures. Elementary facts about the physiology of plants, including reproduction.

Chemistry and Physics.—An elementary knowledge of physical laws (e.g., conservation of energy, atmospheric pressure, and temperature); the characteristics of chemical action and the principles of chemistry; non-metals and their compounds, with knowledge of the usual impurities in those included in the British Pharmacopœia; metals, their oxides and salts, including their preparation, properties, and adulterations; carbon compounds, especially those used in medicine, and how to prepare and test them. The practical examination includes the application of physical laws, as by determining specific gravities, recognition of chemicals by tests, qualitative analysis (two metals and two acid radicals), identification of alkaloids, &c., volumetric analysis of the B.P., assaying alkaloidal preparations, and a practical acquaintance with the methods of preparing the more important B.P. inorganic substances and certain specified organic compounds (e.g., chloroform).

Materia Medica.—Recognition of B.P. and other specified drugs, telling their principal commercial varieties, sources, natural orders, and modes of collection and preparation for the market, some knowledge of their morphology and active constituents, and how the latter may be determined.

Pharmacy.—The examination in this subject deals with all the operations involved in preparing drugs for administration—e.g., evaporation (extracts), distillation, sublimation, and desiccation, solution (infusions, tinctures, &c.), filtration, and expression; the principles involved in the dispensing of medicines, particularly as to pill-masses and emulsions. The candidate is also required to show a general knowledge of the processes by which the official galenical preparations are made, and to have a knowledge of the proportion of active ingredient or crude material in official preparations of aconite and other potent medicines. He must know what are the scheduled poisons in Part I. and Part II., and the legal conditions necessary to be observed in dispensing, retailing, exporting, and wholesaling them; also the special conditions imposed on the sale of arsenic by the Arsenic Act.

Practical Pharmacy and Dispensing.—The candidate is required to make certain B.P. preparations, and to do everything required in compounding and dispensing physicians' prescriptions.

Prescriptions.—The candidate is required to read and translate into English autograph prescriptions and know the grammatical construction of the Latin; to detect errors, discover unusual doses, and have a general knowledge of posology. Also to translate English prescriptions into Latin.

The examination is conducted at 36 York Place, Edinburgh, and at Galen Place, London, W.C. It is practical and oral. The first day is devoted to (1) practical chemistry and (2) dispensing and practical pharmacy, three hours in each subject. In a few days the candidate is informed whether he has passed or not, and if the former he is required to attend for an oral examination in each of the subjects.

AN ACCOUNT OF THE EXAMINATION,

by a candidate who passed in July, is here appended, and other accounts will be found in the issues of the *C. & D.* for May 28, 1904; August 13, 1904; April 8, 1905; April 29, 1905; and June 10, 1905, which can be obtained from 42 Cannon Street, London, E.C., at 4d. each.

The candidate who writes the following account passed the examination in London:

I hope the following short article may be of interest to those studying for the Minor, being an exact account of the work given me to do. May I preface it by saying that it was my first attempt, and the result of three months' school training, although I had previously unsuccessfully contested the Bell Scholarship, which knowledge, of course, stood to my account?

In the morning of my first day I had chemistry, and was instructed to do my qualitative work first. This consisted of a double salt for analysis, which I proved to be magnesium sulphate and zinc carbonate. It obviously gave little trouble, although I found the time quite short enough to write a full report. I then proceeded with my volumetric work, in which I had an arsenical compound to determine the percentage of arsenic, and I found time enough to do two separate titrations, which only showed a difference of about 0.05. A decinormal solution of iodine was provided upon asking for it.

In the afternoon my dispensing was as follows:

(1) Make 100 c.c. liq. plumbi subacet. fort. and take its sp. gr. (hydrometer used).

(2) Tr. ferri perch. ʒij.
Tr. digitalis ʒiiss.
Sp. chlorof. ʒj.
Aquam ad ʒvj.

M. ft. mist. ʒss. t.d.s.

(3) Menthol. gr. xv.
Paraffin. alb. liq. ʒj.

Ft. sol.: To be sprayed up the nostrils night and morning.

(4) Pulv. ac. boric. ʒss.
Zinc oxid. ʒss.
Liq. carbonis deterg. mxxv.
Adipem ad ʒj.

Ft. ung. m.d.u.

(5) Hyd. iod. rub. gr. j., excip. q.s. ut ft. pil. xx.
Sig.: j. three times a day.

I dispensed these in the order written. I was up for my second day a week later, doing little reading between the two days, which is undoubtedly the best policy.

My first subject was prescription-reading. Here I was given two prescriptions to read in full Latin, and one to read in full English, being written in abbreviated Latin, two prescriptions containing incompatibilities, one being a lotion containing silver nitrate and liq. hyd. perchlor., the other a mixture of ammon. carb. and syr. scillæ. I also was asked about twenty doses.

My next subject was materia medica. I had to recognise about fifteen specimens, giving only the common names, also was asked the chemistry of fol. laurocerasi and the percentage of HCN in B.P. aqua laurocerasi; also the diagnostic characters of true jalap and *Cinchona calisaya*.

I had pharmacy next, where I was asked the assay processes of cinchona, opium, and nux vomica, all I knew about

nitroglycerin and liq. thyroidei, also a few strengths, and most of the B.P. mixtures.

In chemistry I was asked to write equations representing the action of chlorine on caustic potash. This I was unable to do, although I could say what the products were. I was then taken through the preparation and differences of acetic and formic acids, also the various sugars and their distinguishing tests, leading on to a few questions about fermentation.

In botany I had to recognise specimens of yew, lavender, yarrow, and comfrey, also had four plants given to describe their natural orders; was asked about carbon assimilation, and transference of the sap in the vascular tissue, also two slides under the microscope, one a section of a pine stem, which could not be missed, but the other, which I was told was an anther, I did not recognise. This concluded my work, and I had the satisfaction of hearing my name called out to receive my notice of success. May it shortly be the lot of those of my readers who are still the wrong side of the Minor! (21/46.)

The Major Examination

entitles those who pass to call themselves "pharmacists," "pharmaceutists," or "pharmaceutical chemists." It is open only to those who have passed the Minor examination, and the entrance-fee is three guineas. The examination is held in London and Edinburgh in the same months as the Minor. Two days are devoted to written papers, and if the questions are satisfactorily answered candidates proceed to practical chemistry. The subjects are as follows:

Botany.—Candidates should have a thorough knowledge of classification, morphology, and physiology. They are required to make and mount microscopic preparations illustrating vegetable structure, and to apply micro-chemical tests for plant-tissues.

Chemistry and Physics.—Candidates may be taken more fully in the Minor subjects, and are expected to have a good knowledge of the constitution of matter, heat, light, magnetism, electricity, chemical theory, and the classification, characteristics, and constitution of the carbon compounds, particularly cyanogen derivatives, hydrocarbons, and paraffin and benzene derivatives. Special attention is paid to B.P. standardising processes. Practical work comprises the analysis of mixtures of three metallic salts; estimation of nitrogen in organic compounds; determination of melting and boiling points; gas-analysis by nitrometer; preparation of certain organic substances; recognition of pharmacopoeial chemicals; and generally the application of all B.P. chemical tests and assay-processes, and the separation of alkaloids and glucosides; also the detection of methyl alcohol in galenical preparations.

Materia Medica.—Candidates must know how to estimate the value of important drugs, and to distinguish commercial varieties and separate official active principles. Also to have a general acquaintance with the actual constituents of all important drugs, discover adulterations, examine drugs microscopically, and so on.

Apothecaries' Assistants' Certificate.

This is not granted by the Pharmaceutical Society, but by the Society of Apothecaries, Blackfriars, London, E.C., under their Charter and Act of 1815. It gives no rights under the Pharmacy Act, 1868, except what may be embodied in the provision that nothing in the first fifteen sections "shall extend to or interfere with the business of any legally qualified apothecary." It follows that the holders of it are not entitled to dispense or retail poisons unless they are employed by legally qualified apothecaries or act under the direct supervision of a registered medical practitioner or chemist and druggist. It is also valid in England and Wales only. It is recognised by the Local Government Board as a qualification for Poor-law dispenserships, and most hospitals require that their dispensers should have it or the Minor qualification. The examination is held at the Apothecaries' Hall, Blackfriars, on the fourth Wednesday and following days of January, April, July, and October. It consists of two parts—practical and oral. The former, which commences at 10 A.M., comprises (1) compounding and dispensing of medicines, and the latter, commencing at 2 P.M., (2) chemistry, (3) materia medica and pharmacy, and (4) translation of prescriptions. When there is a large number of candidates the practical work begins on the Tuesday. A candidate is credited with any of the four subjects in which he may pass, and may present himself for the others subsequently. The fee for the examination is five guineas, and for re-examination two guineas (on each occasion). Candidates are required to give notice to Mr. Frank Haydon, L.R.C.P., Secretary of the Court of Examiners, Apothecaries' Hall, Blackfriars, E.C., on a form to be obtained from him, and to pay the fee, fourteen days previous to the examination. Candidates must be eighteen years of age, and must prove this by a certificate from parent, guardian, or nearest relative. Each candidate must also produce a certificate from a registered medical

practitioner, an assistant of the Society, holding a public appointment, or a legally qualified chemist that he has received six months' instruction in practical pharmacy.

This examination is a favourite with women dispensers, and Minor students in London frequently take it as an appetiser for the Minor. A copy of the regulations, giving the subjects complete, may be obtained from Mr. Haydon on application.

IRELAND.

The twenty-seventh section of the Pharmacy Act of 1868 says "this Act shall not apply to Ireland." At that time the only Act regulating the practice of pharmacy in Ireland was one passed in 1791 by the Irish Parliament for erecting an Apothecaries' Hall in Ireland and providing licensed apothecaries. The privilege of dispensing physicians' prescriptions was reserved to such licentiates. In 1870 the Sale of Poisons (Ireland) Act was passed, which embodied the provisions of the 1868 Act as regards the scheduling of poisons and their sale, but such sale was not restricted to any particular class of traders. In 1875 the Pharmacy Act (Ireland) was passed. This created a Pharmaceutical Society, and gave it power to regulate the qualification of pharmaceutical chemists in Ireland. Up to this time there had been many chemists and druggists in the country, trading as such, and selling poisons. Those of them who desired to compound and dispense medical prescriptions had taken the apothecaries' licence. The 1875 Act did not disturb the apothecaries' privilege, but enabled persons registered under it to sell and compound poisons and medical prescriptions. As there had been two grades in the drug-trade before 1875, so there continued to be, and many connected with it had no desire to be dispensing chemists, their business being confined to selling. Accordingly they did not bother about registering under the 1875 Act, and as they grew in number it became necessary to provide for their registration. This was done by the Amendment Act of 1890, under which chemists and druggists who were in business before 1875, and had not registered as pharmaceutical chemists, were registered as chemists and druggists, and others in business on their own account at the time of the 1890 Act were entitled to be registered as druggists. For others then and in the future an examination was provided, the title granted being "registered druggist." Thus there are in Ireland two distinct sets of examinations, viz.: (1) Those leading to the qualification "pharmaceutical chemist," or licentiate of the Pharmaceutical Society; (2) an examination, defined in the 1890 Act, for the title "registered druggist."

In order to become a pharmaceutical chemist it is necessary to pass a Preliminary examination; serve four years as apprentice or assistant in pharmacy; produce evidence of instruction in botany, practical chemistry, and materia medica; and pass the Licence examination after attaining the age of twenty-one.

The Preliminary Examination.

All communications and inquiries in regard to this and other examinations should be addressed to Mr. Arthur T. Ferrall, Registrar, 67 Lower Mount Street, Dublin, who will supply copies of the official examination schedule on application.

The Society's Examiners conduct this examination at Dublin on the first Thursday and following day of January, April, July, and October. Candidates must give fourteen days' clear notice to Mr. Ferrall, sending a birth-certificate (although no limit is put on the age of the candidate) and the receipt for the fee of 2*l.* 2*s.* lodged in the Bank of Ireland to the Society's account. Six subjects of the examination are compulsory, and one optional subject has to be taken. They are as follows:

Compulsory Subjects.

Latin.—To translate into English and parse sentences from Cæsar's "Commentaries" (*De Bello Gallico*), First Book, or Virgil's "Æneid," First Book. To translate an easy English sentence into Latin.

English.—Grammar, including orthography and parsing. To write on a subject selected by the examiner, and to write from dictation.

Arithmetic.—The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures and the metric system.

Algebra.—As far as simple equations, inclusive.

Geometry.—Including the first book of Euclid.

Elementary Theoretical Chemistry.—Comprising the theory of chemical action. Combustion, water, the air, and the chief physical

and chemical characters and methods of preparing hydrogen, oxygen (and ozone), nitrogen, carbon, chlorine, sulphur, nitrous oxide, nitric oxide, nitric acid, ammonia, carbon dioxide, carbon monoxide, marsh-gas, olefiant gas, hydrochloric acid, sulphur dioxide, sulphurous acid, sulphuric acid, sulphuretted hydrogen.

Optional Subjects.

The one selected by the candidate has to be stated at the time of application.

Elementary Physics and Mechanics.—Sound, light, and heat, as given in Ganot's "Elementary Course of Natural Philosophy"; mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

The Rudiments of Botany, as given in Oliver's "Lessons in Elementary Botany," Part I.

French, German, or any modern language.

In each of the following subjects a candidate must obtain 50 per cent., viz.: (1) English, (2) arithmetic, (3) the British and metrical systems of weights and measures; also 30 per cent. in each subdivision of Latin, and in the optional subject; and 40 per cent. on the entire syllabus to enable him to pass. No candidate will be allowed to pass who does not obtain 20 per cent. in each of the other compulsory subjects. In awarding marks, spelling and the quality of the handwriting are taken into account. Anyone failing to pass is admitted again in six months on payment of 10*s.* 6*d.* The Preliminary or Matriculation examination of the Royal College of Surgeons, or any other examination accepted by the General Medical Council for registration as a medical student, and the Preliminary examination of the Pharmaceutical Society of Great Britain, are accepted instead of the above. Such examination must be passed at least one year before the candidate presents himself for the Licence examination, and fee of 2*l.* 2*s.* has to be paid.

Qualification of Assistant to Pharmaceutical Chemist.

This is an intermediary examination which is open to persons who have passed the Preliminary examination and have been engaged in practical pharmacy for at least four years. The examination is held on the second Mondays in February, May, August, and November of each year, and candidates must give notice to the Registrar of the Pharmaceutical Society at least fourteen clear days before the examination, at the same time sending a receipt of having lodged the fee of 1*l.* 1*s.* with the Bank of Ireland to the credit of the Society. The subjects of examination are:

Prescriptions.—Reading and translating into English autograph prescriptions and detecting unusual doses.

Practical Dispensing of physicians' prescriptions.

Materia Medica.—Recognition of B.P. chemicals and roots, barks, leaves, fruits, resins, and gums, and to judge the quality and freedom from adulteration.

Pharmacy.—Recognition of B.P. preparations, such as extracts, tinctures, and powders, and the proportion of the more active ingredients. Candidates are also examined in the Sale of Poisons (Ireland) Act.

Pharmaceutical Licence Examination.

This examination comprises the following subjects:

Botany.—To recognise the principal indigenous plants used in medicine, to refer them to their natural order, and to give the definitions and the distinctive characters of their several parts.

Materia Medica.—To recognise specimens of the drugs of the Pharmacopœia; to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

General and Pharmaceutical Chemistry.—The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopœia) and volumetric analysis; and to submit to a practical examination in these subjects.

Practical Pharmacy.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly. To explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them, and to have an intimate knowledge of the Sale of Poisons (Ireland) Act.

The examination is held on the second Wednesday of January, April, July, and October, at 11 A.M. Fourteen clear days' notice has to be given to the Registrar, together with a receipt for the fee (5*l.* 5*s.*), which must be previously lodged in the Bank of Ireland.

Each candidate must be twenty-one years of age, and have passed the Preliminary examination or its equivalent at least one year previously. He must also produce a certificate showing that he has served a four-years' engagement in the employment of a pharmaceutical chemist, registered chemist and druggist of Great Britain, or apothecary.

cary, or firm, or several of such persons. The form for this certificate is supplied by the Registrar.

The candidate must also produce certificates proving attendance at a course of practical chemistry of not less than three months, and actual work at the bench of 100 hours, at one of the following institutions, and at a course of botany and materia medica at one of those marked with an asterisk :

- *Pharmaceutical Society of Ireland's School.
- *Pharmaceutical Society of Great Britain's School.
- Cecilia Street School of Medicine, Dublin.
- City of Dublin Technical Schools.
- Government School of Science, South Kensington.
- *Queen's Colleges, Belfast, Cork, and Galway.
- Royal College of Science for Ireland, Dublin.
- Royal College of Surgeons in Ireland, Dublin.
- Trinity College, Dublin.
- School of Physic, Trinity College, Dublin (botany and materia medica).
- Anderson's College Medical School, Glasgow.
- *Royal Academical Institution, Belfast.
- *Municipal Technical Institute, Belfast.
- Crawford Municipal Technical Institute, Cork (botany and chemistry).

The examination occupies at least three days; the first day being devoted to the written examination in all subjects, the second day to practical work in pharmacy and chemistry, and the third day to oral examination in all subjects.

The Council of the Pharmaceutical Society awards a gold medal to the best candidate of the year at the examination, provided he makes a total of not less than 240 marks out of the 300, and of 65 in each of the three subjects; and a silver medal to the second best candidate, provided he makes a total of not less than 230 marks out of the 300, and of 60 in each of the three subjects (botany, chemistry, and materia medica). Persons who fail in the examination are readmitted after six months on a payment of a fee of 1*l.* 11*s.* 6*d.*

Persons who have served an apprenticeship of four years to a chemist and druggist or registered druggist and two years to a pharmaceutical chemist or apothecary keeping open shop are entitled to enter for the Licence examination on fulfilling the regulations as to the Preliminary examination, curriculum, &c.

Registered Druggists' Examination.

Authorised by Section 8 of the 1890 Act. Any person who has served four years as an apprentice or assistant to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary may be registered as a druggist under the Act on passing the examination prescribed therein, which is in knowledge of

- English orthography and composition.
- Arithmetic and the weights and measures of the British Pharmacopœia.
- The appearance and properties of the various drugs and chemicals in general use.
- The Sale of Poisons (Ireland) Act.

The examination is held in Dublin on the second Tuesday of January, April, June, and October, also in Belfast if twelve candidates wish to be examined there at a time. The fee is 4*l.* 4*s.*, and it has to be paid to the credit of the Society into the Bank of England, and the receipt, with the necessary certificates, forwarded to the Registrar fourteen days at least before the date of the examination.

Apothecaries' Assistants' Certificate.

The 1791 Act gives power to the Apothecaries' Hall to examine assistants for a certificate to act as assistants to apothecaries in Ireland. Anyone is admitted to the examination who is sixteen years of age; who has spent two years at practical pharmacy under a duly registered apothecary, or pharmaceutical chemist; and who is of good moral conduct. The subjects of the examination are :

- Pharmacy, Practical and Theoretical, including the correct translation of medical prescriptions.
- Materia Medica, including the doses of the Pharmacopœia, and the recognition of the drugs.
- Antidotes used in cases of poisoning.
- Pharmaceutical Chemistry, including the fundamental laws and recognition of poisonous chemicals. Knowledge of the British Pharmacopœia is requisite.
- Metric System of Weights and Measures.

The examination is held on the first Friday in each month (with the exception of August), at the Apothecaries' Hall, 40 Mary Street, Dublin, at 1 p.m. Fee, 2*l.* 2*s.* Candidates

are required to give seven days' notice, and apply for schedule form beforehand, to the Secretary at the Hall.

OTHER PARTS OF THE BRITISH EMPIRE.

The Minor certificate of Great Britain and the Irish licence are accepted for registration without examination in every part of the British Empire except Canada, on production of the certificate and proof of identity.

Degrees in Pharmacy.

A beginning is being made in the country towards the conferment of degrees in pharmacy—B.Sc. in pharmacy. Manchester University has arranged to grant a degree in science in the school of pharmacy, the examination being for a pass or honours. Students must pass the Matriculation examination. The first year they attend at the University courses of instruction in chemistry, physics, botany, and in the pharmaceutical laboratory; in the second year chemistry, botany, and materia medica are studied; and in the third year courses in chemistry and two of the following: Physics, history of chemistry, electro-chemistry, pharmacology, bacteriology, toxicology, and analysis of foods and drugs. There are two professional examinations. The Intermediate, in physics, chemistry, botany, and practical pharmacy, is held at the end of the first year's study. The Final examination is in chemistry and two of the other subjects of the second and third years' work. The degree is granted independent of qualification under the Pharmacy Acts, but the curriculum is such that it prepares students for the Minor and Major examinations.

The Aberdeen University's Degree B.Sc. in pharmacy is simply a departmental degree in science, and the primary advantage of it to students of pharmacy in Scotland is that they must matriculate at the University after passing the Preliminary examination, so that they become eligible to have their fees paid by the Carnegie Trust. The conditions of study, as to period and attendance at the University and other courses, are the same as for B.Sc. Edin. The First Professional examination is also the same as the First examination in pure science, the subjects being mathematics or biology; natural philosophy (with the addition of a practical test in optics); and chemistry. The Final examination is taken at the end of the three years curriculum, which includes practical experience in the operations of pharmacy. The subjects of the examination are chemistry, botany, materia medica, and pharmacy, in all of which students must have had recognised courses of study.

Scholarships.

The following are offered by the Pharmaceutical Society of Great Britain :

Jacob Bell Scholarships.—Two (30*l.* each and education in the Society's School for ten months) awarded annually. The examination is in June in London, Edinburgh, and Manchester. Subjects: Latin, French, or German, English, arithmetic, botany, chemistry, and pharmacy.

Manchester Pharmaceutical Association Scholarship.—Similar in value to the Bell Scholarship, but the instruction may be taken in any school approved by the Council. Subjects of the examination same as the Bell, and held at the same time.

The Salters' Research Scholarship, Redwood Scholarship, Burroughs Scholarship, and Pereira Medal are awarded to pharmaceutical chemists.

The Fairchild Scholarship and Prizes for students of pharmacy in Great Britain and Ireland, founded by Messrs. Fairchild Bros. & Foster, of New York, is open to any apprentice or assistant of either sex preparing to qualify under the Pharmacy Act, 1868, or the Pharmacy Act (Ireland), 1875. The primary condition imposed is that the applicants satisfy the regulation requirements for admission to their respective qualifying examinations—i.e., the Minor examination in Great Britain or the Licence examination in Ireland. The scholarship is of the value of 50*l.* annually. The examination is conducted at five centres, in England, Ireland, Scotland, and Wales, during the month of July. Additional prizes of 5*l.* each are also given. The subjects of examination are elementary chemistry, elementary materia medica, practical pharmacy and prescription-reading, and elementary business knowledge. Prospectuses can be had from the Secretary to the Trustees, Mr. A. E. Holden, 57-60 Holborn Viaduct, E.C.

Students' Books.

The following list includes the most popular text-books for pharmaceutical students in use at the present time. From this list it is not difficult to make a selection of books for the purpose of education and for use in preparation for examination. It should be noted that the principals of the various colleges and schools of pharmacy have a preference for certain books, and it is well to ascertain by reference to the prospectus of the school what books are actually required for the course of instruction. Some of the colleges publish text-books for the use of their students—the "Westminster," for example, having a complete set of educational works.

Botany.

- Bower's "Practical Botany for Beginners." (Macmillan.) 3s. 6d.
 Green's "Manual of Botany." (Churchill.) Vol. 1, 7s. 6d.; vol. 2, 10s. 6d.
 Lowson's "Botany." (Clive.) 6s. 6d.
 Scott's "Introduction to Structural Botany." (Black.) 3s. 6d.
 Vine's "Elementary Text-book of Botany." (Sonnenschein.) 9s.

Chemistry.

- Attfield's "Chemistry." (Gurney & Jackson.) 15s.
 Bernthsen's "Organic Chemistry." (Blackie.) 7s. 6d.
 Henry's "Aids to Chemistry." (Baillière.) 4s. 6d.
 Meyer's "Outlines of Theoretical Chemistry." (Longmans.) 9s.
 Newth's "Organic Chemistry." (Longmans.) 6s. 6d.
 Perkin and Kipping's "Organic Chemistry." (Chambers.) 6s. 6d.

Analytical Chemistry.

- Clowes and Coleman's "Elementary Practical Chemistry and Chemical Analysis." (Churchill.) 3s. 6d.
 Muter's "Analytical Chemistry." (Baillière.) 6s. 6d.
 Newth's "Practical Chemistry." (Longmans.) 2s. 6d.
 Perkins's "Qualitative Chemical Analysis." (Longmans.) 3s. 6d.
 Proctor's "Pharmaceutical Testing." (C. & D. office.) 2s. 6d.
 "Practical Methods of Urine-analysis." (C. & D. office.) 2s. 6d.

Calculations.

- Dobbin's "Arithmetical Exercises in Chemistry." (Thin.) 1s.
 Whiteley's "Chemical Calculations." (Longmans.) 2s.

Physics.

- Draper's "Heat." (Blackie.) 4s. 6d.
 Everett's "Physics." (Blackie.) 3s. 6d.
 Ganot's "Physics." (Macmillan.) 15s.
 Glazebrook's "Heat and Light." (Cambridge Press.) 5s.
 Loney's "Mechanics and Hydrostatics for Beginners." (Cambridge Press.) 3s. 6d.
 Poyser's "Advanced Magnetism and Electricity." (Longmans.) 4s. 6d.
 Stewart's "Light." (Clive.) 3s. 6d.
 Thompson's "Electricity and Magnetism." (Macmillan.) 4s. 6d.

Materia Medica.

- Flückiger and Hanbury's "Pharmacographia." (Macmillan.) 21s.
 Gadd's "Drugs." (Baillière.) 5s.
 Greenish's "Introduction to Materia Medica." (Churchill.) 15s.
 Murrell's "Aids to Materia Medica." (Baillière.) 3 vols. 2s. 6d. each.
 Southall's "Organic Materia Medica." (Churchill.) 4s. 6d.

Microscope.

- Greenish's "Microscopic Examination of Food and Drugs." (Churchill.) 10s. 6d.
 Hogg's "Microscope." (Routledge.) 10s. 6d.
 Squire's "Methods and Formulae." (Churchill.) 3s. 6d.

Pharmacy.

- British Pharmacopœia, 1898. (Spottiswoode.) 10s. 6d.
 Coblenz's "Handbook of Pharmacy." (Blakiston.) 18s.
 Lucas's "Practical Pharmacy." (Churchill.) 12s. 6d.
 Squire's "Pocket Companion to the British Pharmacopœia." (Churchill.) 7s. 6d.
 Whitto and Humphrey's "Pharmacopœdia." (Kimpton.) 10s.

Dispensing.

- Ince's "Elementary Dispensing Practice." (C. & D. office.) 3s. 6d.
 "Art of Dispensing." (C. & D. office.) 6s.

Prescription-reading.

- Ince's "Latin Grammar of Pharmacy." (Baillière.) 5s.
 Pereira's "Selecta à Prescriptis." (Churchill.) 5s.
 Watson-Will's "Prescription-reading." (Metropolitan College.) 12s. 6d.

Appointments.

Poor-law Dispensers for Unions under the Local Government Board of England are open to those who hold certificates as Licentiates of the Society of Apothecaries, London; apothecaries' assistants (under the English Act); Army compounders of medicines; chemists and druggists (G.B.), or pharmaceutical chemists (Ireland). Salaries begin at 120*l.*, and can be increased by 10*l.* every fourth year until a maximum of 180*l.* a year is reached in the metropolitan area. In the provinces there is no fixed limit, the salary being fixed and varied by the Guardians of each Union, with the sanction of the Local Government Board. Dispensers receive pensions on retirement through age or ill-health, a deduction from the salaries being made in respect to this arrangement.

Dispensers under the Metropolitan Asylums Board receive salaries of 100*l.* a year, rising by 5*l.* annually to 130*l.*, with emoluments of dinner and tea daily. The vacancies are advertised as they occur.

Prison Dispenserships are open to chemists and druggists between twenty-four and thirty years of age. It is necessary to join as a warder and wear uniform. Residence is provided, and the salary is from 105*l.* to 140*l.* a year.

Army Compounders are non-commissioned officers in the Royal Army Medical Corps, who pass examinations in pharmacy, materia medica, posology, and similar subjects conducted by the medical officers. It is necessary to enlist in the corps, and work up to the position which entitles a man to enter for the examination.

Dispensers in Naval Hospitals.—There are nineteen of these berths at home and abroad. Candidates for vacancies (which are advertised as they occur) must be chemists and druggists or pharmaceutical chemists, and not less than twenty-one or more than twenty-eight years old. Entry into the Service is by examination, conducted by the Civil Service Commissioners, but the candidates are first selected by the Medical Department of the Navy, 18 Victoria Street, S.W., to the Director-General of which department applications respecting vacancies and nominations should be addressed. The examination (fee 10*s.*) is in (1) pharmaceutical chemistry; (2) materia medica, including the British Pharmacopœia and its Appendix, poisons and their antidotes, dosage of remedies, and preparation of antiseptic solutions; (3) recognition of chemicals and drugs employed in medicine; and (4) practical pharmacy, prescription-reading, and detection of errors in doses. 3 and 4 are *viva voce* subjects. The pay is 110*l.* a year to begin with, and rises by 5*l.* every two years to 130*l.*, and then by 10*l.* every two years to 230*l.* Additional allowances of from 20*l.* to 40*l.* a year are made to dispensers in charge of stores; 20*l.* is also allowed to the dispenser instructing the Sick-berth Staff at Haslar. Free quarters are provided, and allowances made to those serving on foreign stations to meet the increased cost of living. Dispensers get a month's holiday yearly, and those on foreign stations may reserve their holiday from year to year so as to obtain a longer period of absence, but *locum tenentes* have to be found "without putting the public to any expense in providing substitutes." Pensions are granted on retiring.

Chemists in the Woolwich Laboratory.—The position of junior assistant chemist is open to competition under Civil Service rules. The examination is in chemistry and physics.

Chemist in the Government Laboratories, Clement's Inn Passage, Strand, London, W.C.—Applicants for appointments in the laboratories should apply to the Principal Chemist there, or to the Secretary of the Civil Service Commission, Cannon Row, London, S.W., who will furnish particulars of the examination for the appointments. Salaries vary from 160*l.* to 800*l.*, with pension on retirement.

Schools of Pharmacy.

IT cannot be truthfully asserted that there is a dearth of facilities for obtaining education in the subjects required for the examinations of the Pharmaceutical Society. Private enterprise is responsible for quite a number of pharmacy schools in Great Britain, these being naturally more numerous in the large centres of population. The Pharmaceutical Societies of Great Britain and Ireland carry on schools of pharmacy, as do also the Universities of Liverpool and Manchester, but the greater number of schools are in private hands. There is not, however, a town in Great Britain where instruction is not obtainable in at least chemistry and botany at the local science schools. Such classes form an excellent preliminary training for apprentices or assistants, and will be found to have been a considerable help when the more serious courses of study are attempted at a school of pharmacy. For those students who live in populous towns there are evening or afternoon classes at local schools of pharmacy which should be taken up in connection with a scheme of concurrent curriculum such as has been propounded by Mr. H. Wippell Gadd, of Exeter. The scheme which Mr. Gadd has outlined is designed to extend over three years, the instruction occupying ten hours a week. Particulars were given in the *C. & D.*, August 1, 1903, and are worth referring to by the student about to commence his studies. Following this introduction are brief notes giving the chief features of all the schools of pharmacy in this country. The list is a bit bewildering to those in search of a school, but the choice will depend on several factors, locality, fees, and duration of course. After reading the particulars we give below the student should write for the prospectuses of such schools as appear to meet his requirements and then arrange interviews with the principals, who are always glad to give detailed information to prospective students. It will be necessary in most cases to purchase certain chemicals and pieces of chemical apparatus, such as test-tubes, beakers, and platinum chloride. The cost of these is usually about a sovereign, but as the list varies with each school of pharmacy this point should be the subject of special inquiry.

LONDON.

THE SCHOOL OF PHARMACY, 17 Bloomsbury Square, London, W.C.

Staff: BOTANY—Professor J. Reynolds Green, Sc.D., F.R.S.; Demonstrator: Mr. T. G. Hill, A.R.C.S., F.L.S. CHEMISTRY AND PHYSICS—Professor A. W. Crossley, D.Sc., Ph.D.; Demonstrator: Mr. C. H. Warner. PHARMACEUTICS—Professor Henry G. Greenish, F.I.C.

The session commences on October 2, 1905. Two courses of study are given—an elementary and an advanced course. The elementary course includes subjects required for the Minor, and extends to the end of June, 1906. The advanced course extends from October to the end of March. Students may, however, enter the school at any time and for any subject or part of the course, but it is advantageous to enter at the commencement of the course in October. The fee for the elementary course is 32*l.* 11*s.*, or 30*l.* to student-associates of the Society, and for the advanced course 18*l.* 18*s.* or 18*l.* to student-associates or members of the Society. There is also a summer term for those students who have completed the elementary or advanced course, for which the fee is 4*l.* 4*s.* The lectures on the various subjects can be taken separately. There is a research laboratory in connection with the Pharmaceutical Society and also a laboratory of applied pharmaceuticals which pharmaceutical chemists may use if they fulfil certain conditions. The Dean of the School can be addressed for further particulars, but applications for prospectuses and admission to the School must be made to the Registrar of the Pharmaceutical Society.

MUTER'S (SOUTH LONDON) SCHOOL OF PHARMACY, 325 Kennington Road, London, S.E.

Directors: Mr. A. H. M. Muter, F.I.C., F.C.S.; Mr. Charles A. Hackman, F.I.C. Staff: Mr. Frank Armstrong; Mr. John Thomas, B.Sc.; Mr. W. A. Whatmough, Ph.C.; Pereira Medallist. Secretary, Miss G. Duckworth, L.L.A.

The session at this school lasts from September until the middle of July. Fresh courses of lectures for the Minor and Major begin on September 18, January 2, 1906, and April 3. The fees for the Minor or Major are 8*l.* 8*s.* a term, and "until qualified" (Minor only) 15*l.* 15*s.* A short term for the October examination is conducted at a fee of 4*l.* 4*s.*, the

course beginning on August 22. A free-tuition scholarship is offered for competition in each year and is tenable for one year. The next examination for this is to be held on September 15 and 16.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY (LIMITED),

Trinity Square, Borough, London, S.E.

Principal, Mr. G. S. V. Wills, Ph.C., F.L.S. Secretary, Mr. J. E. Walden. Staff: Mr. A. E. Bell, F.I.C., F.C.S.; Mr. W. A. Knight, Ph.C. (Pereira Medallist); Mr. E. G. Price, Ph.C.; Mr. H. S. Wills.

There are during the school year four courses of lectures, beginning in August, October, January, and April. The next session begins on August 22. The fee for a Minor course is 8*l.* 8*s.*; two courses, 12*l.* 12*s.*; until qualified, 15*l.* 15*s.* Apothecaries' Hall, one session, 5*l.* 5*s.*; two sessions, 8*l.* 8*s.* Evening lectures with practical work are also given, the fee for a three-months' course being 1*l.* 1*s.* Postal systems are arranged for all examinations. A special set of text-books has been published by the principal, these embracing chemistry, botany, materia medica, pharmacy, and prescription reading.

IMPERIAL COLLEGE OF CHEMISTRY,

49 and 51 Imperial Buildings, Ludgate Circus, London, E.C.
Principal, Mr. Frederick Davis.

Courses of study begin in January, April, July, and October. For the Minor examination students are advised to attend the school for six months, but the work is covered in three months. The fee is 10*l.* 10*s.* for the three months' course, 17*l.* 17*s.* for six months. Special Major tutorial course, 8*l.* 8*s.* Students may enter for single subjects. Evening classes are held on the first four nights of the week. Courses of instruction are organised to meet the requirements of the Apothecaries' Hall, the Institute of Chemistry, and the Conjoint Board of the Royal Colleges of Physicians and Surgeons. A feature of this college are the technical and commercial visits to chemical works, etc.

THE METROPOLITAN COLLEGE OF PHARMACY,

160 and 162 Kennington Park Road, London, S.E.

Staff: Mr. W. Watson-Will, F.L.S., F.C.S., Ph.C. (Principal), Mr. Harry Lucas, F.C.S., Ph.C., Mr. F. Filmer de Morgan, F.C.S., Ph.C., Mr. David J. Williams, F.C.S., Ph.C., Mr. Walter S. Carver (Secretary).

The session consists of three courses—viz., winter (beginning on September 1), spring (commencing on January 1, 1906), summer (starting on April 1). An autumn tutorial course began on August 15 occupying the time up to the October examination. Evening continuation classes are held on Monday, Tuesday, Wednesday, and Friday, the systematic course extending from September 1 to July 23, 1906, and being an exact reproduction of a session's day course. The fees are: Major course, one session, 8*l.* 8*s.* Minor course, one session, 10*l.* 10*s.* There are reductions for subsequent sessions. A series of post-graduate courses has been arranged in analytical subjects.

LONDON COLLEGE OF CHEMISTRY, PHARMACY, AND BOTANY, 323 Clapham Road, London, S.W.

Teachers: Mr. Henry Wootton, B.Sc. Lond. (Principal), Mr. A. Kirkland, Ph.C., Mr. G. G. Watt, Ph.C., and Mr. J. Wilson, M.A.

The terms commence on October 2 and at the beginning of January and April. The fees for the Minor course per term are 9*l.* 19*s.* 6*d.* (two terms, 17*l.* 17*s.*); Major, 6*l.* 16*s.* 6*d.* (two terms, 11*l.* 11*s.*). In addition to the regular lectures and practical work, special tutorial classes are held daily at 4 P.M., except Saturday. A special revision course for advanced students began on August 15; fee till the October examination, 5*l.* 5*s.* The session opens on October 2 (students backward in practical work can begin September 26). Evening classes are held, beginning on September 26, the fees for which vary from 1*l.* 1*s.* to 2*l.* 7*s.* 6*d.*, according to the number of classes attended each week.

Special classes are held daily, commencing September 26, in preparation for the examinations of the College of Preceptors, the fee for which is 4*l.* 4*s.* per term of three months. The botanic garden is a feature of the London College.

WEST HAM TECHNICAL INSTITUTE, Romford Road, Stratford, E.

Evening courses for the Minor and Major certificates are mentioned on p. 315.

THE CENTRAL SCHOOL OF PHARMACY,
 2 Charterhouse Street, Holborn Circus, London, E.C.
 Principals: Mr. C. Edward Sage, Ph.C., F.C.S., and
 Mr. E. F. Harrison, B.Sc., Ph.C.

The summer revision course began on August 9 for the October Minor. The winter course begins on September 11, the fees being, until Christmas, 10*l.* 10*s.*, until April, 18*l.* 18*s.* Evening classes are held on Monday, Wednesday, and Friday, the fee being 4*l.* 4*s.* for a three-months' course.

BRIXTON SCHOOL OF CHEMISTRY AND PHARMACY,
 171 Brixton Road, London, S.W.

Principal, Dr. A. B. Griffiths, F.R.S.Ed.

Classes are held for the Minor, Major, and Apothecaries' Hall examinations. There is a post-graduate course in research-work and commercial analysis. Students are coached for the B.Sc., M.B. of London and Durham Universities, Conjoint Board, and Apothecaries' Hall examinations.

Apothecaries' College for Ladies,

112 St. George's Road, Southwark, London, S.E.

For particulars, pass-lists, etc., apply to the Secretary, Mr. J. E. Walden.

PROVINCIAL.

BARROW-IN-FURNESS.

At the Technical School and Higher Grade School, evening classes are arranged in theoretical and practical chemistry and botany which are suited for pharmaceutical students. The session begins early in September, and particulars can be obtained from Mr. W. Hutchinson, Secretary of the Education Committee, the Town Hall.

BIRMINGHAM.

Mr. F. H. ALCOCK, F.I.C., *The Analytical Laboratory, Temple Chambers, Broad Street Corner*, gives tuition in all pharmaceutical subjects. Fees, 8*l.* 8*s.* per quarter. Mr. Alcock also coaches students in special subjects for medical and pharmaceutical examinations, and gives courses in practical analysis.

THE CENTRAL SCHOOL OF PHARMACY, 90 New Street.—Mr. Stokes Dewson has day and evening classes for the Major and Minor apothecaries' assistants' and preliminary examinations.

MUNICIPAL TECHNICAL SCHOOL, *Suffolk Street*.—There are special courses of chemistry on Wednesday afternoons for the Minor examination, the next session commencing early in September. The courses extend over two sessions, and consist in each course of about an hour's lecture and two hours' practical work, from 2.30 to 5.30 p.m. weekly. The lecturers are Messrs. D. F. Twiss and A. W. T. Hyde. The fee for the first year's course is 2*s.* 6*d.* for lectures, or 5*s.* for lectures and laboratory work, and for the second year's course 3*s.* 6*d.* for lectures, or 6*s.* for lectures and laboratory work. There are also botany classes (Stages 1 and 2 and practical) suited for pharmaceutical students (fees—Stage 1, 2*s.* 6*d.*; Stage 2, 3*s.* 6*d.*; practical, 7*s.*), and a materia-medica cabinet has been provided by Southall Brothers & Barclay, Ltd., for the use of students.

BLACKBURN.

Municipal Technical School.

A complete course of classes for the Minor examination was formerly obtainable at this school, but the classes in physics and chemistry are useful to pharmaceutical students. Dr. R. H. Pickard, D.Sc., is the head of the chemical department.

CITY OF BRADFORD TECHNICAL COLLEGE.

Head of Department, Professor W. M. Gardner. Lecturers in Chemistry, Mr. B. North and Mr. S. F. Stell. Lecturer in Botany, Materia Medica, and Pharmacy, Mr. W. West.

The general pharmaceutical course, which includes chemistry and physics (lectures and laboratory), botany (lectures and laboratory), materia medica and pharmacy, and dispensing (lectures and practical), extends over two years, and is arranged so that chemists' apprentices can completely prepare for the Minor and Major examinations of the Pharmaceutical Society during the course of their ordinary work. The classes are held on three afternoons each week, but evening classes are available for those who find it impossible to attend during the day.

BRIGHTON.

A pharmaceutical course for Minor students has been arranged at the Municipal School of Science and Technology, Richmond Terrace. The Minor classes require the attendance of students from 2 to 4.30 on Tuesdays, 10 to 12.30 on Wednesdays, 2 to 4.30 on Thursdays, and 2.30 to 3.30 on Fridays; the physics classes are held on Tuesday and Thursday afternoons,

or on Saturday morning, and are thus available for apprentices and assistants whilst engaged in business; but evening classes are also held. The fee for a complete course is 5*l.* 5*s.* Application for admittance should be made to Dr. C. H. Draper, B.A., the Principal.

BRISTOL UNIVERSITY COLLEGE.

Principal, Professor C. Lloyd Morgan, F.R.S. Professor of Chemistry, Dr. Morris W. Travers, F.R.S. Assistant Professor, Dr. Francis. Lecturer on Chemistry and Lecturer on Pharmaceutics, Mr. Oliver C. M. Davis, B.Sc., Ph.C., A.I.C.

The chemistry classes at nominal fees are useful for pharmaceutical students, and instruction in practical chemistry can be had in the chemical laboratory at fees which depend on the number of evenings a week devoted to the subject. A course in pharmaceutics, meeting the requirements of the Minor examination of the Pharmaceutical Society, has been arranged.

CAMBRIDGE.

The Cambridge Pharmaceutical Association, through their Secretary (Mr. B. S. Campkin, Mill Road), will furnish particulars of classes in botany and chemistry suitable for pharmaceutical students. The classes are held at the Technical Institute, in connection with the Science and Art Department, South Kensington.

DERBY.

Derby Technical College.

Principal, Mr. F. W. Shurlock, B.Sc., B.A. Teachers: Chemistry, Dr. A. J. Walker. Biology, Mr. W. B. Randles, B.Sc. Pharmaceutics, Mr. S. Taylor, Ph.C.

Classes for pharmaceutical students are held in all the subjects required for the Minor and Major examinations and the Assistants' examination of the Apothecaries' Hall. The classes in pharmaceutics (pharmacy and materia medica) are held on Wednesday from 2 to 4, the fee being 1*l.* 1*s.* per term.

EXETER.

School of Pharmacy,

Royal Albert Memorial College.

Lecturers: Physics, The Principal, Mr. W. S. Charlton, B.Sc., and Mr. J. Trott. Chemistry, Mr. W. H. Lewis, M.A. Pharmacy, Materia Medica, and Pharmacy Law, Mr. H. Wippell Gadd. Botany, Mr. J. L. Sager, B.A.

A complete course of instruction for the Minor examination has been arranged in day and evening classes. The composition fee for a ten months' course is 10*l.* 10*s.* Shorter courses and single subjects may be taken if desired. Mr. H. Wippell Gadd has arranged a concurrent curriculum for assistants and apprentices in business. The Registrar should be addressed for further particulars.

LANCASTER.

Municipal Technical School, The Storey Institute.

Principal, Mr. William French, M.A., F.I.C. Chemistry, The Principal and Mr. William Wyatt, Ph.C. Physics, Mr. T. C. Joyce, Inter. B.Sc., and Mr. T. McBrathney, B.Sc. Botany, Mr. William Wyatt, Ph.C.

Practical work as well as lectures given in all subjects.

LEEDS.

The University.

There are courses in chemistry, physics, and botany at the University suitable for pharmacy students. Professor A. Smithells, F.R.S., and Professor J. B. Cohen, B.Sc., are the professors of chemistry, and Mr. J. H. Gough, Ph.C., F.C.S., is demonstrator in practical pharmacy.

College of Pharmacy, Clarendon Road.

Principal, Mr. F. Pilkington Sargeant, F.C.S., Ph.C.

There are both full and part time classes at this College, the next full term beginning on October 10. A short course commences on August 15, on which date students may enter for either the October or January examination. The part-time classes resume work on August 15. The fee for three months' full-time class, Minor or Major, is 8*l.* 8*s.*; for six months, 14*l.* 14*s.* For the evening and weekly classes the fee is 4*l.* 4*s.* for a six-months' course. Mr. Sargeant's "Organic Chemistry" is a useful book for all Minor students.

Leeds Technical School (in connection with the Leeds Institute of Science, Art, and Literature).

Head Master, Mr. R. E. Barnett, B.Sc., A.R.C.S.

There are evening courses of study at this school in chemistry, physics, and botany during the winter. The classes open on September 18. A suitable course of classes in the above subjects has been arranged for pharmaceutical students. The school is recognised by the Conjoint Board

of the Royal Colleges of Physicians and Surgeons for the instruction of medical and dental students in chemistry and physics. Particulars, with complete syllabuses, are given in the "Calendar" of the Institute, to be obtained (post-free, 5d.) from the Secretary, Mr. Arthur Tait, Leeds Institute, Cookridge Street.

LIVERPOOL.
The University
School of Pharmacy.

Chemistry, Professor J. C. Brown, D.Sc. Physical Chemistry, Professor F. G. Donnan, M.A., Ph.D. Physics, Professor L. R. Wilberforce, M.A. Botany, Professor R. J. H. Gibson, M.A. Materia Medica, Professor W. Carter, LL.B. Lecturer on Pharmacy, Mr. Prosper H. Marsden, Ph.C., F.C.S.

Complete courses of instruction are provided, adapted to the requirements of candidates preparing for either the Minor or Major examinations of the Pharmaceutical Society of Great Britain. The Manchester Pharmaceutical Scholarship may be held at this school. The composition fees are eighteen guineas for either the Minor or Major course.

School of Pharmacy, 6 Sandon Terrace, Upper Duke Street.

Principal, Mr. R. C. Cowley.

The full-time course of study for the Minor begins on September 11 and continues till Christmas, the fee being 10*l.* 10*s.* The January and April courses continue till the April and July examinations, the fee being 9*l.* 9*s.* The fee for two full courses, which is recommended by the principal, is 16*l.* 16*s.* Major full-time classes are held from nine to five daily, the fee for a course of three months being 9*l.* 9*s.* There are also part-time classes held on Wednesdays from 3 to 10 P.M., the session beginning on September 13. The fee for a full course is 7*l.* 10*s.* A tutorial class is held on Tuesdays for advanced students, these commencing on September 12.

MANCHESTER.

The Victoria University, Pharmaceutical Department.
Vice-Chancellor, Dr. A. Hopkinson, K.C., M.A. Dean, Professor William Stirling, M.D. Physics, Professor A. Schuster, Sc.D., F.R.S. Chemistry, Professor H. B. Dixon, F.R.S., and Professor W. H. Perkin, F.R.S. Materia Medica and Pharmacy, Professor R. B. Wild, M.D., M.R.C.P., and Mr. Jas. Grier, Ph.C. Lecturer in Pharmacognosy, Mr. Jas. Grier. Botany, Professor F. E. Weiss, D.Sc., and Dr. F. V. Darbishire, B.A.

The courses for the Minor and Major examinations each extend over one winter session (October to April). A composition fee of 15*l.* 15*s.*, payable at the commencement of the session, admits to the college courses for either the Minor or Major examination. Students who have paid the composition fee for a winter session may continue their studies during the ensuing summer session for a further fee of 4*l.* 4*s.* The Manchester Pharmaceutical Scholarship and the Fairchild Scholarship are tenable at this college. Students have access to a very complete museum of materia medica belonging to the medical school. Pharmaceutical students who desire to obtain the degree of B.Sc. in the Victoria University, and who have passed the Matriculation examination, may so arrange their courses for the Minor and Major pharmaceutical examinations as to include the other subjects required for the Intermediate, which must be taken at the end of their first year. The Dean of the Medical School enrolls students for the winter session from September 23 to October 2.

Manchester College of Pharmacy,
225A and 227A Oxford Road.

Director, Mr. Chas. Turner, F.C.S., Ph.C.

The year's work is divided into the following courses: August 21 to January examination (fee 10*l.* 10*s.*), October to the April examination (fee 14*l.* 14*s.*), and January to the July examination (fee 14*l.* 14*s.*). The next term, beginning on August 21, will include a special class for advanced students who wish to enter for the October examinations and a complete course for the January examinations. A six-months' course for the April examination will begin on October 2. Local classes are held on Tuesdays and Wednesdays from 2 to 10 P.M., and evening classes on Mondays and Wednesdays from 7 to 10 P.M. The fees for these classes are 15*s.* a month, or six months 4*l.* 4*s.* There are also classes for the Apothecaries' Hall examination, and instruction is given in water analysis and allied subjects.

Northern College of Pharmacy,
Burlington Street, Manchester.

Principals, Mr. Geo. Clayton, F.C.S., and Mr. F. Lawson, B.Sc. (London).

For the Minor a four-months' and a seven-months' course commence simultaneously on September 4, whilst three-

months' and six-months' courses begin on October 3 and January 2, 1906. This College offers special facilities for apprentices and assistants at the part-time classes, which are held on Tuesdays and Wednesdays in the afternoon, and Monday, Tuesday, and Wednesday in the evening. The fee for a full-time course is 14*l.* 14*s.* for six months, 9*l.* 9*s.* for three months; for the part-time courses 4*l.* 4*s.* (January to July) and 2*l.* 10*s.* (September to Christmas). For the Major the courses commence in September, January, and April. Fee for the full-time course, 6*l.* 6*s.* Courses are also held for the Apothecaries' Hall examination.

NEWCASTLE-ON-TYNE.

North of England School of Chemistry and Pharmacy,
55 Northumberland Street.

Principals: Mr. F. R. Duddridge, F.C.S., and Mr. J. G. Murdoch, Ph.C.

There are four sets of Minor classes in operation at this school: Full-time day class, fee 8*l.* 8*s.* per term of twelve weeks; evening classes meeting three times a week, fee 3*l.* 3*s.*; afternoon classes on Wednesday and Thursday, fee for either day 3*l.* 3*s.*; and a special weekly class for junior assistants and apprentices. Day and evening classes are also held for the Major examination, at fees of 7*l.* 7*s.* per term for the day course and 3*l.* 3*s.* for the evening course. Terms commence in October, January, and April, and a short course of lectures for the October examinations commences on August 14. There are also classes for the Apothecaries' Hall certificate and private tuition for the 1st M.B. Durham.

The Durham College of Science.

Courses of lectures on chemistry, physics, and botany can be taken by pharmaceutical students at this college.

NOTTINGHAM.

School of Pharmacy,
Carlton Chambers, 13 Victoria Street.

Principal, Mr. S. Royce, Ph.C.

The autumn session for the Minor is to commence on September 3. The fees for the term of three months are 8*l.* 8*s.*, or 15*l.* 15*s.* for six months. A four months' course is given for a fee of 9*l.* 9*s.* Evening classes are held on Monday and Friday from 8 to 10 P.M., and practical work classes on Thursday from 2 to 5 P.M.

University College.

Classes are held in all the subjects required for the Minor and Major, and the necessary work is arranged for in the chemical, botanical, and physical laboratories in evening classes. The fees range from 5*s.* to 15*s.* the course. Professor F. S. Kipping, F.R.S., is the head of the chemistry department.

PLYMOUTH.

Municipal Science, &c., Schools.

Lecturers in Chemistry, Mr. J. B. Brown, B.Sc., and Dr. J. R. Thackrah, M.A., Ph.D.

There are courses of chemistry, botany, physics, materia medica, and practical chemistry.

READING.

UNIVERSITY COLLEGE, READING, SCHOOL OF PHARMACY.
Principal: Mr. W. M. Childs, M.A. Lecturers: Chemistry, Dr. C. M. Luxmoore, F.I.C. Physics, Dr. G. J. Burch, F.R.S. Botany, Mr. F. W. Keeble, M.A. Materia Medica, Mr. B. J. Austin, F.L.S.

The subjects of study are those comprised in the syllabus of the Minor examination. A complete course extends over three terms, the composition fee for which is 18*l.*

SHEFFIELD.

The University.

Classes in the three-years' course for Minor students are held on Wednesday, Thursday, and Friday evenings. Mr. John Austen, Ph.C., is the lecturer in materia medica. The fees are: Materia medica, 10*s.* 6*d.*; chemistry, two years, 30*s.* each; practical chemistry, 30*s.*; botany, two years, each 30*s.*

SOUTHAMPTON.

Hartley University College.

Principal, Dr. S. W. Richardson, D.Sc. (Lond.), B.A. (Camb.). Professor of Chemistry, Dr. D. R. Boyd, D.Sc.

Courses suitable for the Minor and Major examinations can be arranged for in the chemical, botanical, and physical departments of this college.

SPALDING.

Grammar School.

Evening classes are held in practical chemistry, suitable for Minor students, Mr. E. Wightman Bell, F.C.S., being the teacher.

WOLVERHAMPTON.

Municipal Science and Technical School.

Teachers: Inorganic and Organic Chemistry, Mr. W. Whitehouse, F.C.S.; Physics, Mr. A. T. Harrison, B.Sc.; Botany, Mr. Sidney Phillips, Ph.C.

Day classes are held in chemistry and physics, and evening classes in chemistry, physics, and botany. Special arrangements are made for the requirements of pharmaceutical students. For other particulars and programme, the Registrar should be addressed.

SCOTLAND.

THE ROYAL DISPENSARY AND SCHOOL OF PHARMACY,
21 West Richmond Street, Edinburgh.

Principal, Mr. William Duncan, Ph.C., F.C.S.

Since the institution of the Royal Dispensary in 1776 pharmacy and materia medica have been regularly taught, but in 1884 the classes were extended to embrace all the pharmaceutical examinations. The session is divided into three terms, commencing in October, January, and April, elementary and advanced courses being carried on simultaneously. For Minor and Major students the fee for one term is 8*l.* 8*s.*; shorter terms at proportional rates. Evening classes, beginning in September and covering the same ground as the day classes, are held on Monday, Tuesday, and Thursday at 8.30. The fee is 3*l.* 3*s.* for the three-months' course.

CENTRAL SCHOOL OF PHARMACY,
26 Clyde Street, Edinburgh.

Principal, Mr. W. B. Cowie, Ph.C., F.C.S.

Full courses of instruction commence in October, January, and April, and a short course begins in August. Evening classes are also held. Fees per term for Minor or Major course, 8*l.* 8*s.* (day) and 3*l.* 3*s.* (evening). A class for preparing students for Preliminary examinations accepted by the Pharmaceutical Society is also held.

GLASGOW SCHOOL OF PHARMACY,
Blythswood Chambers, 180 West Regent Street, Glasgow.
Principal, Mr. John Lothian, Ph.C.; Assistant, Mr. Peter Fenton.

Full courses for the Minor and Major commence on October 2 and last till April. Other courses of three months begin on January 2, 1906, and April 2. A short course for those who have already completed full courses, and wish to present themselves for examination in October, begins on August 14. Fees, 8*l.* 8*s.* per quarter. Evening classes (begin October 2) are 1*l.* 1*s.* per evening in the week per quarter.

WEST OF SCOTLAND COLLEGE OF PHARMACY,
157 St. Vincent Street, Glasgow.

Principal, Mr. T. S. Barrie, F.C.S., Ph.C., assisted by Messrs. W. Graham, W. C. Macmaster, M.A., and J. McKenzie, M.A.

At this institution the fees for the day classes for the Minor are 8*l.* 8*s.* per term of three months, or 15*l.* 15*s.* for six months. Evening and correspondence classes are also held, and there is a special class for those almost ready for examination. Tuition for the Major is given privately and

special subjects can be taught when desired. A weekly afternoon class is held on Tuesdays from 3 to 9 P.M., for which the fee is 2*l.* 2*s.* per quarter. A system of tuition by correspondence is in vogue.

ROBERT GORDON'S COLLEGE IN ABERDEEN.

School of Pharmacy,

Head Teacher, Mr. Gilbert Simpson, Ph.C.

The pharmaceutical department of this college embraces courses of study for the Minor and Major examinations. The term for the October examination begins on August 28. The next ordinary courses begin (1) October 4, (2) January 4, and (3) April 4. The fee for the short course is 3*l.* 3*s.*; for ordinary term, 7*l.* 7*s.* Evening classes are also held, for which the fee is 3*l.* 13*s.* 6*d.*; the next course begins on September 25. Single subjects, the fees for which range from 10*s.* 6*d.* to 21*s.*, may be taken if desired. The Aberdeen Pharmaceutical Association offer prizes (each consisting of three months' free tuition in the day classes) to students of the evening school at the end of the session.

IRELAND.

PHARMACEUTICAL SCHOOLS OF CHEMISTRY, BOTANY, AND
MATERIA MEDICA,

67 Lower Mount Street, Dublin.

Practical Chemistry Class, Director Professor P. Kelly, M.P.S.I.; Theoretical Chemistry and Physics, Mr. T. A. Shegog, F.I.C., F.C.S.; Professors of the Botany and Materia Medica School, Mr. A. H. Laird and Dr. J. S. Ashe, M.P.S.I.

The fees for the courses in accordance with the regulations of the Society are: Practical chemistry (six months), 6*l.* 6*s.*; theoretical chemistry and physics (four months), 1*l.* 1*s.*; botany and materia medica (three months), 2*l.* 2*s.* The winter course begins on October 1. The practical chemistry class is held on Mondays, Wednesdays, and Fridays from 8 to 10 P.M., and comprises at least a hundred hours' actual bench-work. The class for theoretical chemistry and physics is held on Tuesdays and Thursdays from 8 to 9.30 P.M. Each session of the School of Botany and Materia Medica consists of twenty-six lectures, and the classes are held on Tuesdays and Thursdays at 8 P.M., with occasional Saturday demonstrations. The Registrar, 67 Lower Mount Street, Dublin, will furnish full particulars, and receives the fees.

MUNICIPAL TECHNICAL INSTITUTE, BELFAST.

Principal, Mr. Fras. C. Forth, Assoc.R.C.Sc.I. Teaching Staff of Pharmaceutical Department: Mr. S. Templeton, Assoc.R.C.Sc., F.I.C.; Mr. T. Harper, M.P.S., L.P.S.I.; Mr. Chas. McMullan, A.I.C.; Mr. James Andrews; and Mr. Chas. J. Still.

Full courses of instruction in all pharmaceutical subjects begin in the week commencing September 11. Additional courses of instruction in practical chemistry, botany, and materia medica begin on January 9, 1905. Fees: Chemistry, 10*s.*; practical chemistry (100 hours), 1*l.* 10*s.*; botany, 7*s.* 6*d.*; materia medica, 7*s.* 6*d.*; pharmacy, 1*l.* 1*s.*

ESDALE'S TUTORIAL COLLEGE,

Scottish Provident Buildings, Belfast.

Pupils are prepared for the Preliminary examination of the Pharmaceutical Society of Ireland.

The Practice of Medicine.

IN order to become a medical practitioner in any part of the United Kingdom, with full legal powers as such, it is necessary to be registered as a medical student when entering upon the first five years' curriculum of study in approved colleges, schools, or universities, and to pass the Professional examinations of properly constituted bodies.

The General Council of Medical Education and Registration of the United Kingdom is empowered by the Medical Acts to regulate medical education, and to register as medical practitioners all persons who receive from the examining bodies certificates to practise medicine, surgery, and midwifery. The Council does not conduct any examinations—it only registers; and all applications in respect to registration as medical or dental students should be addressed to the General Medical Council's Branch Registrar in the country where the person intends to pursue his studies—viz., for England and Wales, Mr. Henry E. Allen, LL.B., B.A., 299 Oxford Street, London, W.; for Scotland, Mr. James Robertson, 54 George Square, Edinburgh; for Ireland, Mr. Richard J. E. Roe, 35 Dawson Street, Dublin. The requirements for registration as students and as general medical practitioners are embodied in two official publications—viz.,

"Resolutions of the General Medical Council on (a) Professional Examination; (b) Professional Education" (price 6*d.* each); "Regulations in regard to the Registration of Medical and Dental Students" (price 6*d.*). These are sold by Messrs. Spottiswoode & Co., Ltd., 54 Gracechurch Street, London, E.C.

THE CHOICE OF A MEDICAL QUALIFICATION

should first receive the student's attention, as upon this depends the nature of the Preliminary examination which he or she may pass. If one is to study at a university with a view to taking degrees of that body, he must fulfil the conditions of entry laid down by the Universities. These differ with the Universities, which may be grouped into three classes. First there are the residential Universities, such as Oxford and Cambridge, which require residence in a college in Oxford or Cambridge as well as attendance at the University classes for a stated period. A second kind is exemplified by the Scotch Universities and Manchester University, where attendance in the classes for a stated period is requisite, but the living-in system is not. The third kind admits to its degrees students from any approved school or

college; London University is here the type. One may while studying for a university medical degree simultaneously prepare for a registrable diploma either of the Royal Colleges of Physicians and Surgeons or that of one of the Apothecaries' Societies. These are examining bodies who by law may grant certificates or diplomas of competency. These bodies adopt, either entirely or with slight modification, the conditions laid down by the General Medical Council, so that the fact that a person has passed a Preliminary examination recognised by the Council suffices (*plus* the curriculum) to take the student forward to the examinations of any of the Royal Colleges, whereas the Universities demand fulfilment of their own conditions. These may be considered to include all that the General Medical Council lays down and something special in addition. We may look at these

SPECIAL CONDITIONS FOR DEGREES,

because they fairly sift the matter and enable the student to judge what his means or time will enable him to undertake.

OXFORD UNIVERSITY.—The degrees of Bachelor of Medicine and Surgery are granted only to those who have taken the B.A. Oxon. This means residence in a college of Oxford University for three academic years, and passing the examinations, which comprise:

Responsions; *First Public Examination* (Scripture and Pass School or Honour School in Greek and Latin); *Second Public Examination* (Three of certain groups of subjects, two of which—but not more—may be taken from the following: Mechanics and Physics, Chemistry, Zoology, and Botany).

An alternative examination is provided. By taking the B.A. degree through the Natural Science School the curriculum extends to seven years, the last two of which are usually spent in clinical work in London.

Similar conditions to these apply to the degrees of the Universities of Cambridge and Dublin.

PROVINCIAL UNIVERSITIES.—Under this term we refer to the Scotch Universities, the Victoria University, and those of Birmingham, Durham, Leeds, Sheffield, and Wales, where graduation in Arts is not a preliminary to a medical degree (although, of course, in every case an Arts degree absolves the student from further proof of preliminary education). In each of these universities it is necessary to pass an Entrance examination, or produce equivalent certificates, and in no case does proof of registration as a medical student entitle one to enter upon the University course. In each of these Universities a specified part of the five-years' curriculum (as a rule, two years) must be spent in attending the classes of the University which grants the degree, the rest being spent in some other approved school or schools.

LONDON UNIVERSITY.—Here there are now two classes of students, external and internal, the latter being students of affiliated colleges. Both are the same in respect to the fact that all must pass the Matriculation examination of the University, or have an equivalent for exemption. Such equivalents are the degrees of certain approved universities, the Scotch School-Leaving certificate in honours (all the subjects being passed on one and the same occasion), the Oxford Senior Local on certain conditions, and a few foreign certificates. Students are then required to be engaged in their professional studies during five years subsequent to Matriculation, and four years subsequent to their passing the Preliminary Scientific examination, Part I., at one or more of the medical institutions or schools recognised by the University for the purpose; one year, at least, of the four to have been spent in one or more of the recognised institutions or schools in the United Kingdom. This practically enables medical students of any country to get the University degree.

The Regulations of the Royal University of Ireland are closely similar.

THE CONDITIONS FOR COLLEGE DIPLOMAS

may now be looked at. Like the London University, the Royal Colleges permit students to get their professional education at approved institutions, but, unlike that and other universities, they admit to the examinations persons who show no other evidence of general education than that involved in the certificate of registration as a medical student. There is a freedom about the Colleges' regulations which enables students to sample several medical schools during the curriculum—not a wise thing for every man, but useful to some.

It may be concluded from the foregoing that the student should select a medical school nearest to his home—for example, a Lancashire man will go to Owens College, Manchester, and qualify for the Victoria University degrees, for those of the London University, or for the diploma of the

Royal Colleges; the Scotch student will select Aberdeen, Edinburgh, or Glasgow, perhaps Dundee (where a partial curriculum is given), and qualify for his degree or take the College diploma familiarly known as the "triple qual." The Irish student will behave similarly as regards his native schools and qualifications. The majority of London students prepare for M.R.C.S. and L.R.C.P., or L.S.A., but many of these also prepare for the London University degree, some for that of Durham, and Cambridge and Oxford men come to London hospitals for the last two years of their curriculum. A degree in medicine is better than a diploma because it carries with it the courtesy title "Dr.," which *de facto* belongs to all who take the M.D. Surgeons, whether they have M.D. or not, prefer to be called "Mr.," until the King taps their shoulders with a sword.

All the foregoing is intended to make students perfectly understand that

THE OFFICIAL PRELIMINARY EXAMINATION

is to be regarded as a general specification of the extent of education necessary before beginning medical studies, and it is a mere waste of time to begin these studies before passing the examination, because the time does not count in the curriculum. The subjects are:

(a) *English*.—Grammar, Paraphrasing, Composition, questions on English History and Geography.

(b) *Latin*.—Grammar, Translation into English from unprescribed Latin books, Translation into Latin of a continuous English passage, and of short idiomatic English sentences.

(c) *Mathematics*.—Arithmetic; Algebra, including easy quadratio equations; Geometry, including the subject matter of Euclid, Books I., II., III., and simple deductions.

(d) *One of the following subjects*:

(a) *Greek*.—Grammar, translation into English from unprescribed Greek books, translation into Greek of short idiomatic English sentences.

(b) *A Modern Language*.—Grammar, translation into English from unprescribed books, translation of a continuous English passage, and of short idiomatic English sentences.

Latin is obligatory, the only exception being that in the case of natives of India or other Oriental countries, whose vernacular is other than English, an examination in a classical Oriental language may be accepted as equivalent to an examination in it. The General Medical Council recognises a large number of examinations containing these subjects which it accepts. These are detailed in the Regulations for Medical Students already referred to, which everyone contemplating entering into the medical profession should get. Assuming that the student is not to take a university degree he should, if in England or Wales, take the College of Preceptors' Professional Preliminary examination, if in Scotland the Educational Institute's examination, and in Ireland that of the Royal Colleges of Physicians and Surgeons. The English and Scotch examinations have already been referred to (see p. 293).

The following are concise particulars of the Irish one:

The examination is held in March, September, and October, and is open to persons above sixteen years of age. Fee 2*l.* 2*s.*, to be paid seven days before the examination to the Secretary, Mr. Alfred Miller, Royal College of Physicians, Dublin, from whom forms of application should be obtained beforehand.

The subjects of the examination are those specified by the General Medical Council (Irish being considered a foreign language), viz.:

I. *Latin*.—(1) Any two of the following works: Cicero, "In Verrem," Actio II., Book IV.; De Signis; Virgil, "Aeneid," Book III.; Cicero, "In Catilinam"; Virgil, "Aeneid," Book IV. (2) Grammar. (3) Easy sentences for translation into Latin. (4) Passage from unseen author for translation into English.

II. *One of the following Optional Subjects*, viz.:

Greek.—(1) Any two of the following works: Euripides, "Hecuba" (omitting the Choral odes); Xenophon, "Hellenica," Book II.; Xenophon, "Anabasis," Book II.; Homer, "Iliad," Book XXII. (2) Grammar. (3) Easy sentences for translation into Greek. (4) Passage from unseen author for translation into English.

French.—(1) The following works: Souvestre, "Un Philosophe sous les toits," and Coppée, "Le Trésor"; or Voltaire, "Charles XII." (2) Grammar. (3) Easy sentences for translation into French. (4) Passage from unseen author for translation into English.

German.—Any two of the following works: Schiller, "Der Dreissigjährige Krieg," Book IV.; Schiller, "Balladen"—viz., "Das Siegesfest," "der Ring des Polykrates," "die Kraniche des Ibycus," "der Taucher"; "Ritter Toggenburg"; "Graf von Habsburg"; Schiller, "Wilhelm Tell"; Archenholz, "Geschichte des siebenjährigen Krieges," Books I. and II. (2) Grammar. (3) Easy sentences for translation into German. (4) Passage from unseen author for translation into English.

Irish.—(1) The following works: "Oidhe Chloinne Lir" (published by the Society for the Preservation of the Irish Language); "Life of Donnchadh Ruadh MacConmara" (Fleming-Sealy, Bryers & Walker); "Eacabra Ghiolla an Amaraín." (2) Grammar. (3) Easy sentences for translation into Irish. (4) Early

history of Ireland to the commencement of the Danish incursions. (5) Passage from unseen author for translation into English.

Also Dutch or Italian.

III. *English*.—(1) Any two of the following works: Macaulay, "Life of Johnson"; Lyster, "Select Poetry for Young Students, with Introduction" (Browne & Nolan); Goldsmith, "The Traveller"; Macaulay, "Essay on Clive." (2) Grammar. (3) A Sport essay. (4) Paraphrase.

IV. *Mathematics*.—Arithmetic. Algebra: Definitions and explanations of algebraical signs and terms; addition, subtraction, multiplication, and division; simple equations in one or more unknown quantities; easy problems. Geometry: Euclid, Books I., II., and III., or the subjects thereof.

It should be noted that no one is required, or can, register as a medical student until he has passed a Preliminary examination and entered a medical or other recognised school. Then he gets the signature of a teacher to the necessary declaration, which he lodges, accompanied by a fee of 5s., with the Registrar in Dublin, Edinburgh, or London, according to the country in which he commences his studies.

THE MEDICAL CURRICULUM

is laid down by the General Medical Council, and works out at college as follows (slight differences being manifest in the order pursued at different universities):

First Year:

Winter.—Chemistry—lectures and practical; physics—lectures and practical; biology lectures and practical work in botany and zoology.

Summer.—The courses on chemistry and physics are completed and materia medica and practical pharmacy taken. The First Professional examination should be passed.

Second Year.

Winter.—Anatomy—lectures and practical—and physiology lectures.

Summer.—Practical histology and anatomy dissections; materia medica and practical pharmacy (if not previously attended), and Professional examination in the latter subjects.

Third Year.

Winter.—Anatomy—lectures and practical; physiology lectures and elementary practical physiology.

Summer.—Practical surgery, general pathological anatomy, and pharmacology and therapeutics. The Second Professional examination (anatomy and physiology) should be passed.

Fourth Year.

Winter.—Medicine, surgery, pathology, and morbid anatomy, practical morbid histology, and general therapeutics.

Summer.—Obstetrics, ophthalmology, and public health.

Fifth Year.

Winter.—Medicine, operative surgery, gynaecology, and infectious diseases.

Summer.—Forensic medicine, practical toxicology, mental diseases, diseases of children, diseases of the skin, diseases of the larynx, tropical diseases, and diseases of the ear.

Vaccination should be attended at some convenient time during the fifth year. The Final Professional examination should be passed.

A good idea of the work done during the five years is furnished to us by a chemist and druggist (28/54), who writes as follows:

How I Became a Medical Man.

Probably there are but few engaged in pharmacy who have not had at some time or other an inclination to go in for medicine. Almost from the commencement of my apprenticeship I had this desire, and, in spite of my circumstances, it grew year by year until it became a positive longing. I passed the Minor before I was twenty-two, and at twenty-five, after having been engaged in pharmacy ten years, with about 200*l.* in hand, I resolved to go through the medical curriculum. I trusted this sum would pay for hospital and examination fees, books, instruments, etc., and relied upon my ability to earn enough by working part-time to pay for my board, lodging, pocket-money, etc.

While still in business, I passed the second-class College of Preceptors' examination in the necessary subjects, and made the Scotch triple qualification (L.R.C.P., L.R.C.S.Edin., L.F.P.S.Glas.) my aim. In April 1899 I joined a small provincial medical school which was recognised for the first two Professional examinations, and registered as a medical student. I took the Society of Apothecaries' examinations which, with the exception of the final, are accepted by the Scotch Triple Board. My reason for doing this was that Edinburgh was a considerable distance away, and I also

desired to get another qualification—viz., L.S.A.—for which I sat in London.

At that time the Society of Apothecaries exempted candidates who held the Minor from examination in pharmacy, chemistry, and physics. This left me with biology as the only subject for my First Professional. There being no classes in this subject in the summer session at my school, I was enabled to return to business and add a few pounds to my savings, until the winter session opened in October. In due course I returned to begin my studies in earnest, working at biology, anatomy, and physiology. After looking about for three weeks, I secured a berth as dispenser to a doctor, in which my hours of attendance were from six to eight every evening except Sunday, and for which my pay was 12*s.* a week. I attended lectures and dissected every day, and after getting home from the surgery worked from about 9 p.m. to 1 a.m. nearly every day.

In January 1900 my First examination was completed by passing in biology. My attention was then given solely to anatomy and physiology for the following twelve months. The former is the more difficult subject, and (especially some parts of it) is a great tax upon the memory. The study of bones, for example, is somewhat uninteresting, and must be thoroughly mastered, as it forms the groundwork of surgery.

During the summer vacation of 1900, which lasted nearly three months, I took locum work, and was booked for the whole of the time. In this way I was able to give up part-time work for the next three months, previous to going up for my Second Professional in anatomy and physiology. In January 1901 I presented myself for examination, and was again successful, having completed my anatomical and physiological studies in the minimum time, which left me over three years to get my Final and so become qualified in five years, according to the General Medical Council's regulations.

It now became necessary for me to make my choice of a hospital. My original intention was to go to Edinburgh, but I feared that part-time work would be very difficult to secure in that city, for the number of students is very large compared with the size of the place, so my decision was made in favour of a well-known hospital in London, where the fees are not too high.

In hospital the work entirely changes in character, and the student comes into contact for the first time with the diagnosis and treatment of disease. After an interview with the dean of the school and the medical superintendent of the hospital, I was appointed a dresser to the surgical casualty department for two months. It was here I was initiated into the art of dressing wounds, stitching cuts, bandaging, etc. A qualified man superintended the work and explained the cases. Every morning from ten to twelve we students had about sixty or eighty cases of minor injuries to attend. For the remainder of the day we took our turns on duty in the receiving-room. While being employed thus during the day, I searched the columns of advertisements in the journals for a dispensership in the evenings. In about a fortnight I secured a suitable post to a firm of doctors, living indoors, for which I received a salary at the rate of 1*l.* per month for three and a half hours daily (twelve to half-past one in the morning and seven to nine in the evening).

My next step was to become a surgical dresser in the wards for four months to one of the visiting surgeons. I had on an average about seven or eight cases to dress every morning. On the two days of the week that the surgeon for whom I was dressing operated I was on full duty, which meant from 10 a.m. till midnight. The duty of the student on these days was to prepare patients for operation, to be in attendance in the theatre, and to assist if necessary. Notes had to be kept containing a full history of each case, description of the operation, and the daily condition of the patient.

The student will find this part of the curriculum hard work without any part-time dispensing. There is very little time for reading, and after a long day of dressing one feels thoroughly tired.

The next appointment held was clinical clerk in the medical wards. The duties here are much the same, with the exception that there are no operations, and the daily examination of the patient is substituted for the dressing. From the wards I went to the out-patient department, and acted twice a week as clerk and dresser, under a physician and surgeon respectively. Later on I attended the special departments for skin-diseases, ophthalmic surgery, and diseases of women. I took my midwifery cases under the supervision of the medical man for whom I dispensed.

In order to get "signed up" one has to attend clinical lectures, demonstrations in the wards, and the tutor's classes, as well as systematic lectures on all the subjects required in the Final. I attended the North-West London Fever-hospital for my instruction in infectious diseases, and Bethlehem Hospital for lunacy. As soon as my appointments were over, I gave up my berth and succeeded in getting a post as dispenser and teacher of pharmacy to a small college, where the rudiments of

medicine are taught to young men who are proceeding abroad. The hours were 9 A.M. to 1 P.M. for three days a week and one afternoon from two to about four, which allowed me ample time for study. While in this college I had nine weeks' vacation every year. I was fortunate in getting this appointment as there were over a hundred applicants for it, and still more to be able to keep it to within a month of going up for my Final. The salary was 70*l.* per annum. At the end of the five-years' prescribed curriculum I went in for both of my Finals at London and Edinburgh and passed in all the subjects for the Scotch Triple; but for the L.S.A. I was unsuccessful in medical jurisprudence and clinical surgery, both of which I got through later. At the Final examination there are six written papers, a clinical, both in medicine and surgery, and about ten orals. Although one has to know so many subjects, it is quite possible that the candidates may not get a single question upon some of the special branches.

After qualifying, I was appointed surgeon to one of the liners belonging to a well-known shipping company, and after a good voyage was as hearty as ever. I have since had experience as a *locum-tenens* and assistant, and am now in practice for myself.

To any intending part-time student I would say that the most essential things to carry him through successfully are (1) good health, (2) a capacity to be able to make good use of odd minutes, (3) perseverance, and (4) a keen interest in the work. I know men who began medicine with the intention of doing it part-time, but from ill-health, caused through lack of exercise, only a few to my knowledge have been able to continue throughout. The strain is very considerable, and one has to devote to work the time that most students give to recreation. Suitable berths near the hospital and medical school are by no means easy to get. I have met many who were unable to get posts.

As to qualifications, undoubtedly a degree should be aimed at, if possible; the cost is very little more, but the time taken is generally longer. If one has any intention of specialising, degrees and higher qualifications are essential, but in general practice a man stands more upon his merits than upon his qualifications.

In conclusion let me add that the Minor man will have no difficulty in getting through his First Professional; his pharmaceutical knowledge will assist him very considerably in his Final, and especially so after qualifying. In my opinion, a medical qualification is within the reach of any chemist who will save a little money and is prepared to work.

MEDICAL QUALIFICATIONS.

There are in the United Kingdom some twenty distinct "portals" for entering the medical profession. Five of these are the corporate bodies which grant diplomas, the remainder being universities, which grant medical degrees.

MEDICAL DIPLOMAS.

Royal English Colleges.—The familiar title L.R.C.P.L. and M.R.C.S.E. is granted to men only by the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England. Candidates must pass a preliminary examination recognised by the Board (substantially those of the G.M.C.), and during the five years' professional curriculum pass three examinations. The first is in physics and chemistry, practical pharmacy (which may be taken at a later stage), and elementary biology. It may be taken in separate parts. The candidate's studies in these subjects need not have been pursued in a medical school. The certificates of certain other institutions are recognised. Pharmacy may be studied under any medical practitioner or member of the Pharmaceutical Society, or in a public hospital, infirmary, or dispensary. The four years after the first year of the prescribed period must be spent in a medical school. The second examination is in anatomy and physiology, which must be taken together. The third examination is in the branches of medicine, surgery, and midwifery, and may be passed in three parts. Total fees, 42*l.* Address: The Secretary, Examination Hall, Victoria Embankment, London, W.C.

The Apothecary's Licence, commonly called L.S.A., is granted by the Society of Apothecaries, and entitles to registration as a medical practitioner. By a resolution of the Court of Assistants of October 8, 1900, it has been resolved that the only titles which the Society can authorise as a proper description of the L.S.A. 1886 are those of Physician and Surgeon, either added to the title of L.S.A. 1886, or used alone. Candidates must be registered medical students and pass two Professional examinations, each of which can be taken in parts. Fees, 21*l.* Address: Mr. F. Haydon, Secretary, Court of Examiners, Apothecaries' Hall, Blackfriars, E.C.

Royal Scotch Colleges.—The Scotch triple qual., L.R.C.P.&S.Edin. and L.F.P.S.G., is conferred by the Con-

joint Board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow. Candidates are required to pass the Educational Institute's Preliminary examination or otherwise to be registered as medical students, and to pass four Professional examinations—viz., *First*, in physics, chemistry, and elementary biology at the end of the first year. Fee, 5*l.* *Second*, in anatomy and physiology. Fee 5*l.* *Third*, in pathology. Fee 5*l.* *Final*, at the termination of the full period of study, in the rest of the subjects. Fee, 15*l.* The examinations are open to women. Addresses: Mr. James Robertson, Solicitor, 54 George Square, Edinburgh, and Mr. Alexander Duncan, B.A., LL.D., Faculty Hall, 242 St. Vincent Street, Glasgow.

Royal Irish Colleges.—The L.R.C.P.I. and L.R.C.S.I. is conferred by the Conjoint Board of the Royal Colleges of Physicians and Surgeons in Ireland. The Board holds a Preliminary examination in the subjects prescribed by the G.M.C. in March, September, and November yearly. Fee, 2*l.* 2s. The Board also recognises the examinations on the G.M.C. list. There are four Professional examinations—viz., at the ends of the first and second winter sessions and third and fifth years of study. From a convenient table given in the official guide we note that the *total* expense of obtaining the triple qualification is placed at 160*l.* 13s. (this is exclusive of the student's board and lodging). The examinations are open to women. Secretary, Mr. Alfred Miller, Office of the Royal College of Physicians, Dublin.

Irish Apothecaries' Licence, or L.A.H., is granted by the Court of the Apothecaries' Hall of Ireland. Candidates must be registered as medical students for fifty-seven months, must present certificates of having fully completed the course of study as laid down in the curriculum, and must pass four Professional examinations. Fees, 22*l.* 1s. Address: The Registrar, Apothecaries' Hall, 40 Mary Street, Dublin.

MEDICAL DEGREES.

The first point to note is that all Universities require students proceeding to their medical degrees to pass the Preliminary examination peculiar to each University or (in some cases) its equivalent, and to pursue professional studies therein during a part at least of the curriculum. The London University and the Royal University of Ireland are exceptions on the latter point. The degrees granted and sufficing for registration as a medical practitioner are—bachelor of medicine and bachelor (or master) of surgery, which carry with them the courtesy title of doctor. In the subjoined notes we refer solely to the bachelors.

Aberdeen.—The regulations in this and the other three Universities in Scotland are identical and are given under *Edinburgh*. The Dean of the Faculty of Medicine is Professor R. W. Reid, M.D.

Birmingham.—The Matriculation examination of the University in G.M.C. subjects must be passed, or its equivalent (*e.g.*, that of any other University, or College of Preceptors' first class). The examination will be held on September 11, 1905, June 5 and September 24, 1906. Fee, 2*l.* Four of the five years' curriculum must be spent in the University, but the Senate have power to recognise attendance at another University, and to recognise such University examinations in chemistry, physics, and comparative anatomy. Five Professional examinations. Fees, 16*l.* Dean, Professor Barling.

Cambridge.—The student must matriculate at and reside in the University nine terms, also pass (or obtain exemption from) the Previous examination, and three Professional examinations, and keep an Act—*i.e.*, read a thesis composed by himself, upon which he may be examined. The arrangements enable Cambridge medical students to take the greater part of the curriculum in London. The Cambridge University Press publishes a "Students' Handbook," which is a useful compendium of information. There are four Professional examinations. Fees, 25*l.*

Dublin.—Students must be B.A.s of this University or of Oxford or Cambridge, and spend five years in professional studies.

Durham.—Students must pass the Registration examination in English, English history, geography, Latin, arithmetic, algebra, Euclid, and Greek, or French, or German. The examination is to be held on September 26, 1905, March 27 and September 25, 1906. Eight other examinations are recognised in lieu of this. Fee, 1*l.* 10s. Secretary, the Rev. H. Ellershaw, North Bailey, Durham. Of the five years' curriculum one year must be spent at the Durham College of Medicine, Newcastle-on-Tyne, and the others in approved institutions.

Edinburgh.—A Preliminary examination is required to be passed before entering, the subjects being (1) English, (2) Latin, (3) elementary mathematics, (4) Greek, or French.

or German. In the case of a candidate whose native language is not English, an examination in his own native language may be substituted for French or German, and an examination in any other classical language for one in Latin or Greek. Examinations are held in March and September. Fee, 10s. 6d., payable to Mr. T. Gilbert, the University, Edinburgh. Certain examinations are accepted in lieu of this examination. Of the five years' curriculum two years must be spent at the University, and the remaining three may be spent at some other recognised school. Of the sixteen professional subjects at least eight must be taken at the University, or in some recognised University. There are four Professional examinations. Total fees, 23l. 2s. Dean, Professor D. J. Cunningham, the University, Edinburgh. The above information also applies to the Universities of Aberdeen, Glasgow, and St. Andrews as far as the course of studies is concerned.

Glasgow.—Conditions as in Edinburgh University (*q.v.*). Inquiries and correspondence should be addressed to Mr. W. Innes Anderson, Matriculation Office, the University, Glasgow, and in the case of women students to Miss Galloway, Queen Margaret College, Glasgow. Dean of the Faculty of Medicine, Professor Murdoch Cameron, the University, Glasgow.

Leeds.—The degrees M.B. and Ch.B., M.D. and Ch.M. are granted, the conditions being similar to those at the University of Manchester (*q.v.*). Inquiries should be addressed to the Dean, Dr. de B. Birch, the University, Leeds.

Liverpool.—A special matriculation pamphlet is obtainable from the Registrar, University of Liverpool. This examination or its equivalent has to be passed, and otherwise the conditions for graduation are the same as the Victoria University. Dean, Professor B. Moore, the University, Liverpool.

London.—Candidates for the M.B. and B.S. must pass the Matriculation examination or be exempted as graduates of Universities approved by the Senate. Women who have obtained the Cambridge Tripos certificate, or that of the Oxford Second Public examination or honours in the Oxford University Examination for Women in modern languages, are also exempt. The higher or honours grade of the Scotch School-Leaving certificate also gives exemption from the Matriculation examination. The University, in common with the Royal Colleges of Physicians and Surgeons, does not require its matriculated medical students to register as such at the General Medical Council. There are two classes of students, *internal* and *external*, the former comprising those who have matriculated and attended any one "approved course of instruction" in a school or under any one recognised teacher of the University. There are three Professional examinations in the normal course of study. The first of these is the "Preliminary Scientific, Part I," which cannot be taken until one academic year after matriculation. The subjects are inorganic chemistry, physics, and biology. Part II. of this examination, comprising organic chemistry, is taken not less than six months afterwards. The "Intermediate," the subjects of which are anatomy, physiology, and pharmacology, follows a year after Part II. of the Preliminary Scientific; the last examination being the "Final," in medicine, surgery, midwifery, and diseases of women, forensic medicine, and hygiene, which is taken two academic years after the Intermediate. Booklets are issued giving very full particulars of the curricula and examination schemes. Communications should be addressed to the Academic Registrar, University of London, South Kensington, S.W., or in the case of external students, the External Registrar.

Oxford.—The degrees B.M. and B.Ch. are granted only to those who have taken the B.A. degree. There are a Preliminary and two Professional examinations, and a certain portion of the curriculum must be taken at the Oxford Medical School. Particulars of fees are given in the "Student's Handbook" published by the Clarendon Press at 2s. 6d.

Royal University of Ireland.—Candidates must pass the Matriculation and First University examinations. The examinations are held in the summer and autumn at various centres. Fee, 1l. The subjects are Latin, English, mathematics, natural philosophy, and a modern or classic language. The "First" examination is in the same subjects, but cannot be taken until a year after the Matriculation. Fee, 1l. Four Professional examinations have also to be passed. Fee, 1l., except for the M.B., etc., examination, which is 2l. The University recognises most of the medical and science schools in the United Kingdom for the requisite instruction. Address, The Secretaries, R.U.I., Dublin.

St. Andrews.—Conditions the same as in Edinburgh University (*q.v.*). The Dean of the Faculty of Medicine is Mr. E. Wymouth Reid, F.R.S., University College, Dundee.

University of Manchester.—The Matriculation examination or its equivalent has to be passed. It is held in June, July, and

September each year by the Joint Matriculation Board (representing Leeds, Liverpool, and Manchester) in the following subjects: (1) English language or literature, and English history; (2) mathematics; (3) three of the following, one of which must be a language: Greek, Latin, French, German, some other modern language approved by the Board, elementary mechanics, chemistry, geography, or natural history. Fee, 2l., payable to the Secretary, the Joint Matriculation Board, Owens College, Manchester. Arts graduates are exempt from the examination, also any who have matriculated at the London University and those who have the Higher Local Oxford and Cambridge certificates and the Senior Locals in honours. At least two years of the five years' curriculum must be passed in the University. There are three Professional examinations, the arrangements being similar to those for the London University degrees. Fees, 19l. 18s. Dean, Professor W. Stirling, The University, Manchester.

OTHER EXAMINATIONS.

Admission to probation for the Royal Army Medical Corps is by competitive examination, held twice a year in London. Information is obtainable from the Director-General of the Army Medical Department, 18 Victoria Street, Westminster, S.W.

The regulations for admission to the Indian Medical Service are obtainable from the Military Secretary, India Office, S.W.

Commissions as Surgeons in the Royal Navy are conferred as the result of competitive examinations, concerning which information should be obtained from the Director-General, Admiralty, Northumberland Avenue, W.C.

Medical Schools.

We give below a list, with a few particulars, of the schools and colleges recognised by the authorities as proper places of tuition for medical students, which are affiliated with the University of London. Further details may be obtained from the deans or secretaries:

LONDON.

Charing Cross Hospital, The Medical School, Chandos Street, W.C.—Fees for general students, 120l. 15s., or 132l. 6s. in five instalments. There is a reduction made to the sons of registered medical practitioners. Fees for dental students, 57l. 15s., or 64l. 1s. in two instalments. Dean, Mr. H. F. Waterhouse.

Guy's Hospital, London Bridge, S.E.—Fees about £160. Has a residential college, in which rooms cost from 11s. to 27s. per week. Dean, Dr. H. L. Eason.

King's College, Strand, W.C.—Fees for the University of London courses: Preliminary Scientific, Part I., 26l. 5s.; Inter.M.B. and Pre.Sc., Part II., 57l. 15s. The Conjoint Board Course fees are 5l. 5s. less. Dean of the Faculty of Science (Medical Division), Professor W. D. Halliburton, M.D., F.R.S.

King's College Hospital, Portugal Street, W.C.—Fees for the University of London or Conjoint Board Courses: Advanced students, 73l. 10s.; composition-fees: University full course 147l., Conjoint Board full course 141l. 15s.

London Hospital, Mile End, E.—Fees, 126l., or 136l. 10s. in instalments (sons of medical men 15l. 15s. less). Contains 927 beds, and is the largest accident hospital in the world. A new block has been added for better accommodation and more adequate teaching in the various departments. Warden, Mr. Munro Scott, Turner Street, Mile End, E.

London (Royal Free Hospital) School of Medicine for Women, 8 Hunter Street, Brunswick Square, W.C.—Fees, Intermediate and Final M.B. Lond. course, including hospital practice, 135l., or 145l. in four instalments. Dean, Miss Cock, M.D.

Middlesex Hospital, Cleveland Street, W.—Fees, about 150l. Dean, Mr. J. Murray, F.R.C.S. Residential college, 14s. 6d. to 17s. 6d. per week (exclusive of board). Warden, Dr. R. A. Young.

St. Bartholomew's Hospital, West Smithfield, E.C.—Fees, 31l. 10s. entrance and 31l. 10s. annually for five years or a single payment of 173l. 5s. Has a residence for students. One entrance scholarship of 150l., two of 75l., and one of 50l. are offered in science, and there is an exhibition worth 20l. in general education; the total value of scholarships and prizes awarded annually is about 900l. Warden, Mr. W. D. Harmer.

St. George's Hospital, Hyde Park Corner, S.W.—Fees: Prel. Science 21l., entrance-fee 21l., annual composition-fee 31l. 10s.; clinical students, entrance-fee, 10l. 10s. There are several entrance scholarships at this hospital. Dean, Mr. F. Jeffrey, F.R.C.S.; Warden, Dr. R. S. Trevor.

St. Mary's Hospital, Cambridge Place, Paddington, W.—Fees for full curriculum, 140*l.*, or 145*l.* in instalments. Entrance scholarship examinations will be held on September 25 to 27. Dean, Dr. H. A. Caley.

St. Thomas's Hospital, Albert Embankment, S.E.—Fees, consisting of entrance and composition fees, amount to about 120*l.* Prospectus can be obtained from the Medical Secretary, Mr. G. Q. Roberts.

University College, Gower Street, London, W.C.—Faculty of Medicine.—Composition-fees required by the University of London courses, 173*l.* 5*s.*; for the Examining Board in England and Society of Apothecaries, 168*l.*; for dental students (L.D.S. course), 68*l.* 5*s.* Dean, Professor Risien Russell, M.D.

Westminster Hospital, Caxton Street, S.W.—Fees, Course for examinations of Conjoint Examining Board, 120*l.* 10*s.*, or 141*l.* 15*s.* in six instalments. Dean of the School, Mr. Paton.

PROVINCIAL.

Aberystwyth and **Bangor** (constituent colleges of the University of Wales) as far as the First Professional examination is concerned. The Registrar of the Aberystwyth University is Mr. J. Mortimer Green; for Bangor address the Dean of the University.

Birmingham.—*University Faculty of Medicine*.—Fees (complete for obtaining the degrees of M.B. and Ch.B.), 154*l.* 19*s.* 6*d.* Dean, Professor Gilbert Barling, M.Sc., F.R.C.S.

Bristol.—*University College*.—Students can complete in Bristol the entire course of study required for the Medical and Surgical Degrees of the University of London. Fees, 73*l.* 10*s.*, or 57*l.* 15*s.* (in one sum), and hospital 12*l.* 12*s.* (annual) and 21*l.* (perpetual). Dean, Professor E. Markham Skerriitt, M.D. Registrar and Secretary, James Rafter.

Cambridge.—*University Medical School*—Apply to the Registry, the University Registry, Cambridge.

Cardiff.—*University College*.—Instruction is given for the Preliminary scientific and Intermediate M.B. examinations, Lond., and for the corresponding examinations of other universities. Fees, 57*l.* 10*s.*, or for Conjoint Board, 41*l.* 10*s.* For particulars apply to the Registrar or Dean.

Leeds.—*University Faculty of Medicine*.—Composition-fees for classes for M.B., Ch.B., and diplomas, 112*l.* 17*s.* 6*d.* Dean, Professor de B. Birch, M.D.

Manchester.—*Victoria University*.—Fees for M.B., 127*l.* 5*s.* exclusive of special courses. Dean, Professor William Stirling, M.D.

Newcastle-on-Tyne.—*Durham College of Medicine*.—Fees, 101*l.* 17*s.*, with some extras. Secretary, Professor Robert Howden, M.A.

Oxford has an excellent school of medicine, particulars of which can be had from the "Student's Handbook," referred to on p. 306.

Sheffield.—*University (Faculty of Medicine)*.—Fees about 110*l.* Dean, Dr. W. T. Cocking.

SCOTLAND.

Aberdeen.—*University Faculty of Medicine*.—Fees about 100*l.* Secretary, Mr. Donaldson R. Thom, M.A.

Dundee.—*University College*.—Classes and hospital practice for the degree of M.B. and degree in Public Health. The college is affiliated to St. Andrews University. Secretary, Mr. R. N. Kerr.

Edinburgh.—*University Faculty of Medicine*.—Minimum class and hospital fees, 115*l.* Dean, Professor D. J. Cunningham.

School of Medicine of the Royal Colleges.—The minimum cost of the education at this school for the triple qualification, including examination-fees, is 115*l.* Secretary, Mr. R. N. Ramsay, solicitor, 27 Forrest Road, Edinburgh.

Glasgow.—*University Faculty of Medicine*.—Fees for M.B. and Ch.B., including Matriculation, class-fees, hospital attendance, and Professional examinations, about 150*l.* Dean, Professor Murdoch Cameron, M.D.

Anderson's College Medical School, Dumbarton Road.—Fees for Scottish triple, about 70*l.* Communications to Dr. Robert Barelay Ness, 19 Woodside Place, Glasgow.

Queen Margaret College, Hamilton Drive, Glasgow (Glasgow University School of Medicine for Women).—Fees for M.B. and Ch.B., including Matriculation, class-fees, hospital attendance, and Professional examinations, about 150*l.* Hon. Secretary, Miss Galloway.

St. Mungo's College, the Medical School of the Royal Infirmary, Glasgow, 86 Castle Street.—Fees for English and Scottish Conjoint qualifications, about 65*l.* The Dean, Professor A. Macphail, will supply a detailed syllabus.

St. Andrews University.—*Faculty of Medicine*.—The subjects for the whole of the curriculum are taught. (*See also Dundee*.) Fees, 3*l.* 3*s.* per subject. Secretary and Registrar, Mr. Andrew Bennett.

IRELAND.

Belfast.—*Queen's College*.—Fees, about 95*l.* Registrar, Dr. Johnson Symington, F.R.S.

Cork.—*Queen's College*.—Fees (for M.B., R.U.I.), about 85*l.* Registrar, Mr. Alexander Jack, M.A.

Dublin.—*Catholic University Medical School*, Cecilia Street, Dame Street.—Minimum cost of lectures, hospitals, special courses, and examination may be put as follows: Royal University, 160*l.*; Conjoint Colleges, 160*l.*; Apothecaries' Hall, 141*l.* Registrar, Dr. A. Birmingham.

School of Physic in Ireland (Trinity College).—Fees, 149*l.* 6*s.* 6*d.* Registrar, H. W. Macintosh, M.A., Trinity College.

Royal College of Surgeons in Ireland.—Schools of surgery, including Carmichael and Ledwich Schools. All the lectures and courses of practical instruction may be attended by medical students who are otherwise unconnected with the college. Address, the Registrar, St. Stephen's Green, Dublin.

Galway.—*Queen's College*.—Fees, as at Cork. Registrar, Professor Townshend.

The Practice of Dentistry.

THE Dentists Act, 1878, provides for the registration of persons specially qualified to practise as dentists in the United Kingdom, and leaves with the General Medical Council the control of the scheme of qualification. The Royal Colleges of Surgeons in England, Scotland, and Ireland examine candidates for diplomas. Dental students pass the same Preliminary examination as medical students, and are required to register as students at one or other of the General Medical Council's Offices. Candidates for a diploma are required to produce certificates of having been engaged during four years in professional studies, including three years' instruction in mechanical dentistry from a registered practitioner or in some dental hospital. The curriculum includes, as general medical subjects, chemistry, anatomy, physiology, surgery, medicine, and clinical work; and, as special dental subjects, dental anatomy and histology, dental surgery and pathology, dental mechanics, two years' attendance at a dental hospital, and three years' instruction in mechanical dentistry. Registration should not be delayed, as the date of registration determines the commencement of qualifying study. The following diplomas can be obtained:

Royal College of Surgeons, England.—Dental surgery.

Royal College of Surgeons, Edinburgh.—Dental surgery.

Faculty of Physicians and Surgeons, Glasgow.—Dental surgery.

Royal College of Surgeons, Ireland.—Dentistry.

University of Birmingham.—Bachelor and Master of Dental Surgery (only granted to those who have obtained a licence in dental surgery).

University of Dublin.—Licentiate and Master of Dental Science.

L.D.S.ENG.

A Preliminary Science Examination must be passed, consisting of chemistry and physics. Synopses may be obtained on application. The instruction must have been obtained at a recognised institution, and be not less than 180 hours' instruction and laboratory-work in chemistry and 120 hours' instruction and laboratory-work in physics. This may be studied for prior to registration, but is passed after being registered as a dental student. Fee, 3*l.* 3*s.*

The First Professional is in mechanical dentistry and dental metallurgy, and is taken after the three years' training under a competent practitioner, or under the direction of the superintendent of the mechanical department of a recognised dental hospital and a six months' course at a recognised dental school. The training in mechanical

dentistry may have been taken before registration. Fee, 2*l.* 2*s.*

The Second Professional comes at the end of the curriculum four years subsequent to the date of registration as a student, and the student must be twenty-one years of age. It is written, practical, and oral. The written examination comprises general anatomy, physiology, pathology, and surgery, dental anatomy and physiology, dental pathology, and dental surgery. The oral comprises the same subjects, and is conducted by the use of preparations, casts, drawings, etc. In the practical portion students are examined in dental caries, and may be required to fill cavities, etc.; their knowledge is also tested with regard to the irregularities of children's teeth. Part I. must be passed before Part II. Fee, Part I., 2*l.* 2*s.*; Part II., 3*l.* 3*s.* A further 10*l.* 10*s.* is paid for the diploma. Particulars may be had from Mr. F. G. Hallett, Examination Hall, Victoria Embankment, W.C.

L.D.S. EDIN.

The requirements are similar to those laid down in England. There are only two examinations, which are taken during the Collegiate curriculum. Anatomy, chemistry, physics, and physiology are included in the first examination, the remaining subjects, such as surgery, medicine, and therapeutics, coming under the second. Fees, 15*l.* 15*s.* Address: Mr. James Robertson, Clerk to the Royal College of Surgeons, 54 George Square, Edinburgh.

L.D.S. GLASG.

The examinations and fees for this are much the same as in Edinburgh. Address: Mr. A. Duncan, B.A., 242 St. Vincent Street, Glasgow.

L.D.S. IREL.

For this degree of the Royal College of Surgeons in Ireland the course of study is as follows: Candidates are required to pass three examinations—viz., Preliminary (in general education), Primary Dental, and Final Dental. The Primary Dental examinations commence on the second Monday in the months of February, May, and November. The subjects of examination are physics, chemistry (including metallurgy), anatomy, physiology and histology, and surgery. The fees for the Primary Dental examination amount to 10*l.* 10*s.*; and for re-examination, if rejected, 5*l.* 5*s.* The Final Dental examinations commence on the Thursdays immediately following the Primary Dental examinations. Candidates are examined in dental surgery, theoretical (including dental pathology), clinical, and operative; and in dental mechanics, theoretical, clinical, and practical (including the metallurgy of the workshop). Candidates must pass in all the subjects at the same time. The fees for the Final Dental examination in the case of candidates holding L.R.C.S.I., or students who have passed Primary Dental or Third Professional examination of the College are 10*l.* 10*s.*; re-examination, 5*l.* 5*s.* For final examination of all other candidates, 26*l.* 5*s.*, and for re-examination, 10*l.* 10*s.* The extra fee for special examination, 5*l.* 5*s.* A rejected candidate is not admitted to examination until after a period of three months.

M.DENT.SC. AND L.DENT.SC.

The University of Dublin grants both a degree and a licence in dental surgery. For the licence students are advised to begin their three-years' course of instruction in dental mechanics before passing the Entrance examination in Trinity College. After having been registered as a student two years' lectures are taken and the Previous Dental examination passed, and the Final at the end of the fourth year. The total fees in order to obtain the licence are 200*l.* 17*s.* The Degree examination includes pathology and bacteriology.

B.D.S. AND M.D.S. BIRMINGHAM.

The University of Birmingham grants the degrees of Bachelor and Master of Dental Surgery and a diploma in dental surgery, L.D.S. Candidates for the degrees must pass the Matriculation examination required from medical students; they must have a licence in dental surgery, which must have been obtained at least twelve months previous to taking the degree, six months of this time being spent in the dental department of a hospital approved by the University. The candidate must also produce evidence that he has attended the following medical courses as required of medical students at the

University, and passed the examinations held in the same for medical and surgical degrees: Chemistry, practical chemistry, physics, comparative anatomy, anatomy, physiology. Also that he has attended courses as follows: One course of lectures on medicine, one on surgery, special courses on the surgery and medicine of the mouth, pathology and bacteriology, dental histology, and comparative anatomy, dental surgery and prosthetic dentistry. The examination deals with the above subjects as far as they relate to dentistry. The M.D.S. degree can be taken by thesis twelve months later. The cost of obtaining the licence of dentistry and the B.D.S. amounts to 149*l.* 19*s.*, exclusive of necessary books and instruments.

D.D.S.

This American degree is granted by some universities in the United States. It is not registrable in this country. Those degrees most valued can only be obtained after two years' residence (*i.e.*, two winter sessions) in the case of dentists registered in this country; three years if previously unqualified. The chief value of the degree is that it enables one to obtain practical acquaintance with American dentistry. Formerly certain American degrees were accepted by the General Medical Council, but this is not now the case. The following are the more important dental schools in the United States, but they are not all connected with the universities:

Harvard University. Address E. H. Smith, 283 Dartmouth Street, Boston, Mass.

Michigan University Dental College. Address, J. Taft, Ann Arbor, Mich.

Baltimore College of Dental Surgery. Address, Dr. M. W. Foster, 9 West Franklin Street, Baltimore, Md.

New York Dental School (University of N.Y.). Address, Dr. C. M. Ford, 218 West 135th Street, New York.

University of Pennsylvania. Address, Dr. E. C. Kirk, Dental Hall, cor. 33rd and Locust Streets, Philadelphia, Pa.

Columbian University. Address, Dr. J. H. Lewis, 1023 Vermont Avenue, N.W. Washington, D.C.

North-Western University Dental School. Address, Dr. W. E. Harper, 146 Franklin Street, Chicago, Ill.

The cost of the curriculum is generally: Matriculation, \$5; class-fees each year, \$100; dissecting-fee, \$10; and diploma-fee, \$30; besides books and instruments. Board can be obtained at from \$4 to \$6 per week in most American cities.

RECOGNISED DENTAL HOSPITALS AND SCHOOLS.

LONDON.

Guy's Hospital Dental Department and School. London Bridge, S.E.—Fees for L.D.S. Eng., 110*l.* (or 115*l.* 10*s.* in two instalments), payable on entrance. Dean, Dr. J. Fawcett.

National Dental Hospital and College, Great Portland Street, W.—The well-appointed bacteriological laboratory offers unusual facilities. Fees for complete curriculum, 40*l.* in one payment. Registered dental students can receive the three-years' mechanical training in the laboratory under the best possible conditions, the fee being 50*l.* each year in advance. A "composition fee," including three years' mechanical pupilage and two years' hospital practice and lectures, amounts to 160*l.* Two entrance exhibitions, value 40*l.* and 20*l.*, are offered for competition at the commencement of each session. Dean, Mr. Sidney Spokes.

Royal Dental Hospital of London, Leicester Square, W.C.—Fees for dental part of curriculum, 53*l.* 3*s.*, in instalments 55*l.* 13*s.* Single courses may be taken. Dean, Mr. J. F. Colyer.

St. Thomas's Hospital Dental Department.—The arrangements and fees are similar to those at Guy's and Westminster.

Westminster Hospital Dental Department.—Fees: One payment of 52*l.* 10*s.*, or two payments of 27*l.* 10*s.* each. A scholarship of 20*l.* is offered for competition annually to commencing dental students.

PROVINCIAL.

Birmingham.—University Dental Department and Dental Hospital.

Bristol.—Medical School, Royal Infirmary, and General Hospital.

Dublin.—School of Dentistry and Dental Hospital, Lincoln Place.

Edinburgh.—Dental Hospital and School, 31 Chambers Street. Dean, Mr. W. Guy, F.R.C.S., 11 Wemyss Place.

Exeter.—Dental Hospital. Hon. Secretary, Mr. Henry Yeo, 8 Bedford Circus, Exeter.

Glasgow.—Dental Hospital and School, 5 St. Vineent Street.

Liverpool.—University Dental Department and Dental Hospital.

Manchester.—University Dental Department and Victoria Dental Hospital. A separate prospectus is published. Address the Registrar.

Newcastle-on-Tyne.—Royal Infirmary and Dental Hospital.

Sheffield.—The University Dental Department.

Veterinary Surgery.

MANY pharmacists, especially those with a country training, hanker after veterinarianism, and to these and others who have a liking for animals the veterinary profession as a branch of medicine has a fascination which (if the enthusiasm is kept up) affords material for a successful career. In 1844 a charter was granted to the Royal College of Veterinary Surgeons (10 Red Lion Square, W.C.), which states that the "veterinary art as practised by the members . . . shall be henceforth deemed and taken to be and recognised as a profession." In 1881 the Veterinary Surgeons Act was passed, which placed with the College the power of granting veterinary diplomas, and protected the title. This Act, however, gives no monopoly of veterinary practice, and it has been decided by the High Court that a chemist may use the title "veterinary chemist."

The regulations of the Royal College of Veterinary Surgeons, which has now been recognised by London University, requires a candidate to pass (1) the Preliminary examination recognised by the General Medical Council, or (2) the Veterinary Preliminary examination of the Educational Institute of Scotland. The latter examination is held in London, Edinburgh, Glasgow, and Dublin simultaneously, three times in the year, and comprises Latin, mathematics, English, and either Greek, French, German, Italian, or any modern language, and logic. Particulars from Mr. S. M. Murray, 40 Princes Street, Edinburgh. The candidate must next study at a recognised veterinary school for four years, during which time he must (3) pass four Professional examinations as follows:

EXAMINATION A.—Anatomy of domesticated animals; bones, ligaments, joints. Chemistry and elementary physics. Biology: elementary zoology and botany.

EXAMINATION B.—Anatomy of domesticated animals. Histology and physiology. Stable management and manipulation of domesticated animals. Principles of shoeing.

EXAMINATION C.—Morbid anatomy, pathology, and bacteriology. Materia medica, pharmacy, therapeutics, and toxicology. Veterinary hygiene and dietetics.

EXAMINATION D.—Principles and practice of veterinary medicine and surgery. Clinical medicine, surgery, and obstetrics (horse and other domesticated animals). Meat-inspection.

The candidate must be twenty-one years of age when entering for D.

The examinations are conducted by a Board of Examiners, which visits Edinburgh, Glasgow, Dublin, and London towards the end of the College terms (May and December). A fee of 5*l.* for each examination has to be paid to the Royal College at a specified date before the examination, and after the fourth is passed 1*l.* is paid for registration.

At the annual general meeting of the Royal College of Veterinary Surgeons held at Edinburgh in June last a new by-law was passed, however, which enacts that

Every student who is a candidate for the diploma of the Royal College of Veterinary Surgeons shall before he is admitted to the First Professional examination produce a certificate or other evidence satisfactory to the Council to show that he has passed one of the examinations specified in the first schedule attached to these by-laws.

This alteration is to come into force on August 1, 1906, and the list of examinations accepted is similar to that required

by the General Medical Council, set forth in detail, the only noteworthy point being the fact that the Preliminary Medical examination of the Educational Institute of Scotland will be required, and the Veterinary Preliminary done away with. During the past year a Veterinary School attached to the University of Liverpool has been incorporated by Royal Charter and affiliated to the Royal College of Veterinary Surgeons, being a transference from the New Veterinary College, Edinburgh.

Holders of the diploma M.R.C.V.S. who have been a certain time in practice may obtain by thesis and examination the title of F.R.C.V.S. Army veterinary appointments are open for competition: commencing salary is 250*l.* a year, with rank of lieutenant, increasing by advancement to 1,200*l.*—the salary of the director-general, who holds rank of major-general.

The curriculum fees amount to 100*l.* at the least, and these do not include any adventitious aids, such as private-coaches' classes. In addition to the college-fee, a student will need for microscope, dissecting-instruments, and books, say, another 50*l.*; allowance should also be made for illness and for failure at one or more of the examinations, which will entail a prolongation of the time during which the student is not in a position to earn anything.

The following are the institutions which instruct students for the examinations. It should be noted that the Royal College of Veterinary Surgeons is the examining and not a teaching body.

Royal Veterinary College (founded 1791; incorporated 1875). Great College Street, Camden Town, London, N.W.—Educational fee, 80*l.*, paid in four instalments, and 2*l.* 12*s.* 6*d.* library fees. There are also fees for occasional students as follows: Anatomy, 8*l.* 8*s.*; botany, 3*l.* 3*s.*; chemistry, 5*l.* 5*s.*; pathology, 5*l.* 5*s.*; physiology, 5*l.* 5*s.*; practical chemistry, 3*l.* 3*s.*; practical histology, 3*l.* 3*s.*; practical pathology, 5*l.* 5*s.*; surgery, 5*l.* 5*s.*; and veterinary medicine, 5*l.* 5*s.* Principal and Dean, Professor John McFadyean, M.R.C.V.S. Secretary, Mr. R. A. N. Powys.

Royal (Dick) Veterinary College (founded 1823). Clyde Street, Edinburgh.—Matriculation and class fees, 58*l.* 16*s.*, in four payments. The Carnegie Trust pays students' fees at this College if the conditions laid down by the Trustees are fulfilled. It should be noted, however, that the Educational Institute examination is not accepted by the Trustees. Principal, Professor J. R. U. Dewar, F.R.C.V.S.

University of Liverpool.—*Veterinary Department.*—Transferred from New Veterinary College, Edinburgh. Fees for four years' lectures and all other instruction, 15*l.* 12*s.*, payable in four instalments of 18*l.* 18*s.* Principal, Professor W. Owen Williams. Materia medica is taught by Professor Carter, with Mr. Prosper H. Marsden, Ph.C., and Mr. H. Sumner, M.R.C.V.S., as demonstrators. Mr. Marsden is also Lecturer in Pharmacy, which is a separate subject.

Glasgow Veterinary College (established and incorporated 1863). Buccleuch Street, Garnethill, Glasgow.—Fee, 60*l.*, or 63*l.* in instalments. The Carnegie Trust pays the fees of students who fulfil the conditions. Principal, Professor J. McCall, F.R.C.V.S. Secretary, Mr. D. J. Weston.

Royal Veterinary College of Ireland, Pembroke and Shelbourne Roads, Dublin.—Fees, 21*l.* a session, with 1*l.* 1*s.* entrance-fee. The new illustrated prospectus gives a capital idea of the arrangements at this the newest of the Veterinary Colleges. Principal, Professor A. E. Mettam, B.Sc.

Principles and Practice of Science.

NOT a few of those who started life as chemists' apprentices have, by industry and the knack of seizing their opportunities, proceeded beyond the bounds of pharmacy into the boundless realms of pure science. Such illustrious names as Professor W. A. Tilden and Sir Joseph Swan at once occur to the mind, and others could be mentioned. Pharmacy has always been more or less a feeder of medicine



DR. GEORGE SENTER.

and science, much more so a hundred years ago than now, but the habit persists, and we may best be able to show how it is done by taking a living and recent example of how a chemist's apprentice and assistant has become a scientist. We refer to Mr. George Senter, Ph.D., B.Sc. (Lond.), pharmaceutical chemist, whose career forms a fitting introduction to this section of our educational information.

Dr. Senter was born in 1874 at Kildrummy, Aberdeenshire, and was educated at the parish school there. He passed the Preliminary examination before he was apprenticed, in 1889, to his cousin, Mr. J. A. Center, chemist and druggist, Edinburgh. From the beginning of his apprenticeship Mr. Senter attended chemistry

and botany classes at the Heriot-Watt College, and was an active member of the Edinburgh Chemists', Assistants', and Apprentices' Association, to which he is still grateful for the assistance and encouragement it rendered him in those days. During the last year of his apprenticeship (1893) he gained a special botanical prize given by the Association, as well as the Ainslie Pharmacy Prize. In 1895 he competed for and obtained a Bell scholarship, he being the first in Scotland to secure this distinction. Coming to Bloomsbury he took such advantage of his opportunities that he negotiated the Minor in April, 1896, and the Major in July of that year, taking at the school a silver medal for practical chemistry, three bronze medals in chemistry and materia medica, and three certificates in chemistry, botany, and materia medica, capping the whole with the Pereira medal. Mr. Senter then returned to Edinburgh and taught pharmacy in the Edinburgh Central School for three years under Mr. Cowie, and while teaching he continued his studies at the Heriot-Watt College with a view to the London B.Sc. He matriculated in 1898, and passed the Inter. B.Sc. in 1899. Then he decided that if he were to adequately prepare for the Bachelorship it was necessary to replace evening studies by day work. Accordingly he resigned his position at the Central School to study at University College, London, under Sir William Ramsay. Mr. Cowie's students so appreciated Mr. Senter's work among them that they presented him with a gold Albert pendant and several valuable books on chemistry and physics before he left Edinburgh.

In London his studies progressed so well that when he took the B.Sc. in 1900 he obtained first-class honours in chemistry. After taking his degree Mr. Senter continued research work under Sir William Ramsay and Dr. Morris W. Travers, producing conjointly with the latter and with Mr. Adrien Jaquerod papers on low-temperature phenomena, read before the Royal Society and the British Association. In 1901 the culminating point in his studies came in the shape of a nomination by University College to an 1851 Exhibition Research Scholarship. These scholarships, which amount to 150*l.* a year for two or, on special recommendation, three years, were, with others, founded from the surplus funds left from the International Exhibition of 1851, and have done much for science. They represent a practical protest against the present tendency to multiply small scholarships which cannot do much for their holders unless they have some other source of income. About

twenty colleges and universities in the United Kingdom and the Colonies have the power of nominating one student per annum for these scholarships, which are generally spent on research work at a continental university. Due, in part, to association with Sir William Ramsay and his encouragement and assistance, Mr. Senter's favourite study was, and is, physical chemistry, and accordingly he decided to pursue that branch of chemical science under Professor Ostwald, at Leipzig. He went there in the autumn of 1901, and took his degree of Doctor of Philosophy by research eighteen months after, with a thesis on "A Hydrogen Peroxide Decomposing Enzyme of the Blood," calling the enzyme hæmase. After taking the Ph.D., Dr. Senter studied electro-chemistry under Nernst, at Göttingen, for six months. He was then offered an extension of his scholarship for another year, but being anxious to start work at home, he refused. Accordingly he came home in 1903, and for the session 1903-4 held the appointment of Lecturer in Chemistry at the Sir John Cass Technical Institute, in Aldgate. In July 1904 he became Lecturer in Chemistry at St. Mary's Hospital Medical School, Paddington, an appointment which he still holds. In the summer term of 1905 he delivered a unique course of lectures at the Cass Institute on physical chemistry. When he is not engaged at St. Mary's, Dr. Senter continues his research work at the Davy-Faraday Research Laboratory of the Royal Institution, and in the course of the last two years he has communicated papers on enzyme actions to the Royal Society and the American "Journal of Physical Chemistry." Dr. Senter has favoured us with some practical details of

SCIENTIFIC LIFE AND WORK IN GERMANY,

which we reproduce for the benefit of those who may desire to fit themselves to take advantage of this class of opportunity:

Life in Germany outside Berlin is generally cheaper than in England, and Dr. Senter puts the cost of living there at two-thirds that in London. Thoroughly comfortable lodgings with a German family may always be obtained, in Leipzig, for 4*l.* 10*s.* to 5*l.* 10*s.* a month, including board and all extras. Some students take a room, getting all meals outside, except the early coffee and rolls, which constitute breakfast; but, although the professors usually speak English, a working knowledge of the German language is essential in the University studies and examinations, and it is best, therefore, to stay with a family in the town, restraining, as far as possible, one's natural desire to use the mother tongue. Many English students do not progress favourably on this account, for their clanish tendencies lead them to converse too much with one another, and neglect the opportunities for acquiring a native accent. In Göttingen living is somewhat cheaper than in Leipzig, and it is usual to take a room only, getting meals at a *pension*.

University fees in Germany are very reasonable. At Leipzig they amount to 12*l.* to 14*l.* per year, compared with 40*l.* or 45*l.* in an English university, for the German Government spends, on an average, 30*l.* per year on each student who completes his course. Apparatus is extremely good and cheap, and the facilities for research Dr. Senter considers to be much greater than in this country. For the first term apparatus would cost the physical chemistry student 7*l.* or 8*l.*, and the organic student 10*l.* or 15*l.* The university does not supply materials, but the cost after the first term need not, except in organic chemistry, exceed 4*l.* a year. Full time admission to the laboratories costs 8*l.* a year in Leipzig, and a course of lectures, three per week, about 1*l.* the half-year. Dr. Senter considers that it is possible to live with comfort and without stint in a German town on 110*l.* to 120*l.* a year, including fees and all other expenses.

Foreign students entering German universities now have to pass a preliminary examination before starting their original work, to ensure that they possess adequate knowledge for research work. This consists of a *viva voce* and practical examination in the student's own subject rather below the standard of the London B.Sc. Pass examination. Then, if they already have the B.Sc. or similar degree, they start on a piece of original work, which is selected by the student, but must be approved by his professor. Two other subjects, selected by the student, must also be studied. The three subjects might be, for instance, research in physical chemistry, physics, and mathematics. It is not compulsory to attend many courses of lectures, but it is usual to attend one in each subsidiary subject,

and several in the principal subject. The German academical year consists of two sessions or semesters, as they are called, running from the third week of October to the third week of March, and from the third week of April to the second week in August. Work commences early in the day. Lectures start at 8 A.M., and the laboratories are open at the same hour, work continuing until 6 P.M. In fact, Pfeffer, the famous professor of botany, lectures at Leipzig at 7 A.M. in the summer. Lectures last nominally one hour, but the first quarter is given as grace, to permit delivery without interruption by late-comers. Research work is carried on by the student more or less at his own convenience in separate and special buildings devoted to a particular branch of science. There are three of these special buildings in Leipzig University for the different branches of chemistry.

THE PH.D. IS TAKEN BY THESIS

and examination from eighteen months to two and a half years after the English graduate enters the university. Germans commencing without a degree have to spend four or five years at work before graduating. The time depends upon the student and the nature of his research. When his professor is satisfied that definite results have been obtained, the student writes his thesis and sends it to the university along with the examination fee (17*l.* 10*s.* in Leipzig for foreigners and 5*l.* less for Germans), and a short sketch of his career. The examination is in the three subjects studied by the student, and is conducted *vis à vis* in German by the student's professor, for his research subject, and by two of the university professors for the other subjects. The standard of this examination is about that of the London B.Sc. for the subsidiary subjects and considerably higher for the principal subject. After the examination 200 printed copies of the thesis must be delivered to the university before the diploma is granted. The expense entailed is considerable; printing three hundred copies may cost from 15*l.* to 25*l.*, according to the length of the dissertation.

Dr. Senter lays great stress on the advantage to the English student of education in Germany. At the universities there he meets and works with research students of all nationalities, and from all parts of the world, with the result that his own mind and views are inevitably broadened, thus realising one of the first principles of true education. Although Dr. Senter was in Leipzig at the time of the Boer war, when feeling against England ran high, he always found that English students were treated quite courteously. With regard to German students, Dr. Senter is not sure that they turn out real thinkers. The boy intended for a university career remains at school until he is seventeen or eighteen, working very hard, probably too hard, and then is turned over to the university, where the absolute lack of control after the rigid discipline of his school life usually results in his wasting a year or two over beer and duels. When he does set to work he keeps at it far more earnestly than the average Britisher, but it is more as a plodder than as a thinker; he has not greater intelligence than the Englishman, but he is more systematic. However, the system works well in practice, his thinking powers are developed by the research necessary for the thesis, and the work required for the Ph.D. is a better training than that for a science degree in this country. Finally, Dr. Senter is of opinion that a pharmaceutical training is a great advantage to the scientist, since it accustoms him from his earliest days to those niceties and accurate habits of work and mental attitude which alone produce the highest results in pure science.

It may be added that Dr. George Senter is a spare and energetic Scotchman with a Scotch accent which has survived all German associations. Those who have attended his lectures have always been struck with his great energy and enthusiasm for his subject. He is just as enthusiastic in the exposition of truths which have long been familiar to him as is the thinking student to whom realisation of those truths has come for the first time. Consequently his lectures are always lucid and well connected, though he delivers them *ex tempore*.

Qualifications in Chemistry.

The proper course of education and scientific training which should be followed by those who desire to practise analytical and consulting chemistry is well indicated in the Regulations of the Institute of Chemistry of Great Britain and Ireland. This body was founded in 1877 and incorporated by Royal Charter in 1885, for the following purposes: (1) To promote the better education of persons desirous of becoming public and technical analysts and chemical advisers on scientific subjects; (ii.) to examine candidates, and to grant certificates of competency; and (iii.) to elevate the profession of consulting and analytical chemistry by setting up a high standard of scientific and practical proficiency, and by insisting on the observance of strict rules in regard to professional conduct. The Insti-

tute consists of Fellows, Associates, and Students. Every candidate for admission to the studentship must be at least seventeen years of age and must have passed an approved Preliminary examination. Most of the certificates recognised by the General Medical Council are also recognised by the Institute, provided the candidate can produce a certificate of having passed a full examination including the following subjects:

- (a) English language.
- (b) Latin.
- (c) Mathematics, comprising arithmetic, algebra to simple equations inclusive, and geometry, including Euclid, Books I., II., III.
- (d) One of the following: French, German, Italian, any other modern language approved by the Council, Greek, or logic.

At the time of registration as a student the candidate must be at one of the institutions recognised by the Council of the Institute or a pupil of a Fellow of the Institute. The annual registration-fee is 5*s.* There are two courses of study open to the student: one takes three years (entirely collegiate), and the other four years (half collegiate and half with a F.I.C.). There are two examinations conducted by the Institute—the Intermediate and the Final. Those who have a recognised degree in chemistry, physics, and mathematics are admitted to the Intermediate examination without other evidence.

The curriculum must include theoretical and practical chemistry and physics, mathematics, and one of the following: Advanced mathematics, mechanics and chemical engineering, metallurgy, geology and mineralogy, physiology, and bacteriology. The Intermediate examination may be taken at the end of the curriculum. It requires a thorough acquaintance with the fundamental laws of chemistry; with the methods of preparation of the more important elements and compounds, both inorganic and organic; with the principles of chemical classification, and the current theories of chemical science. The fee for the examination (which occupies at least four days) is 5*l.* 5*s.* The holders of certain honours degrees are exempt from the Intermediate examination if they produce satisfactory evidence of having been trained in theoretical and practical chemistry, in theoretical and practical physics, and in one optional scientific subject. Among these we note those holding:

B.Sc., Edinburgh.—Final examination, with special distinction in chemistry. (The same for B.Sc. of the other Scotch Universities.)

B.Sc., London.—Final examination, with First or Second Class Honours in chemistry. (The same for Manchester.)

The Final examination also occupies at least four days, and those who have passed the Intermediate or have been exempted from that examination may enter from it. Fee, 5*l.* 5*s.* The Examiners are at liberty to apply any test which they think desirable either *vis à vis*, or by writing, or by experimental work, in order to obtain evidence as to the knowledge of theoretical and practical chemistry possessed by the candidate, who is required to show a thorough acquaintance with at least one of the following branches of chemistry, to be selected by himself: (a) mineral chemistry; (b) metallurgical chemistry; (c) physical chemistry; (d) organic chemistry; (e) analysis of food and drugs and of water; (f) biological chemistry. Candidates in Section (e) are required to show a general knowledge of the therapeutic effects of chemicals and drugs, and of the quantities which, taken internally, would be injurious or fatal to man. This section is the one which those who wish to become public analysts should take. It is recognised by the Local Government Board.

For admission to the Fellowship, an Associate is required to have been registered for three years, and to have been continuously engaged during that period in the study and practical work of applied chemistry in a manner satisfactory to the Council. Entrance-fee 5*l.* 5*s.* Fellows and Associates also pay an annual subscription of 1*l.* 1*s.*, or Fellows may pay a life-composition of 21*l.*

The book of regulations is published by Messrs. Blundell, Taylor & Co., 173 Upper Thames Street, London, E.C., price 1*s.* Registrar of the Institute, Mr. R. B. Pilcher, 30 Bloomsbury Square, London, W.C.

The Council have recently resolved to hold extra examinations in the industrial applications of chemistry, and to

grant certificates in respect thereof. These examinations will be open only to Fellows and to those Associates who have been registered as such for at least one year. Candidates will be required to produce evidence of practical technical training. The examinations will comprise the following:

- (a) The application of well-known chemical and physical laws to industrial operations.
- (b) The development, control, and transmission of power and heat.
- (c) A working knowledge of operations and plant of which general use is made in industrial works for the treatment and handling of materials, finished products, waste products, and effluents, including a practical acquaintance with fittings and stores.
- (d) The properties of materials affecting their application to the construction of plant and apparatus in chemical-works.
- (e) Some ability in interpreting drawing of chemical-plant and in making dimensioned rough sketches.
- (f) The calculation of working-costs, and a general knowledge of the clerical work connected with manufacturing-operations.

Each candidate will be required to select one important industry, in which his knowledge of the above subjects may be tested. Questions which might involve the disclosure of unpublished processes and details of plant in particular works will not be asked. All candidates will be expected to give evidence of a general knowledge of chemical technology. The Examiners will take into account original work and special knowledge, but not so as to excuse the candidate from any part of the examination. An Advisory Committee has been appointed to decide the arrangements to be made for the conduct of the examinations, and the form they shall take. The first examinations under this scheme will be held in 1906.

In addition to the Institute of Chemistry requirements it should be noted that every university college in the country has a course of study for those seeking a diploma and training in chemical science. In London there is the course of the City and Guilds Central Technical College, Exhibition Road, London, S.W., one of the best-equipped science schools in the world. It is a school of the London University, and it is advisable for those who enter upon the course for the college diploma to pass the University Matriculation examination, otherwise they must pass the College examination in mathematics, mechanics, one language, and mechanical drawing, or physics or chemistry. The curriculum of study is as follows:

First Year.—Daily lectures and practice in chemistry, physics, mathematics, engineering drawing and workshop, and mechanics.

Second Year.—Daily lectures and practice in chemistry, crystallography, engineering, and engineering design.

Third Year.—Chemical-laboratory work, civil engineering and mechanical or electrical engineering, crystallography and physical chemistry, workshop bookkeeping and accounts, and, if desirable, mathematics.

The Finsbury Technical College, Leonard Street, London, E.C., is under the same auspices, but the nominal course is two years, being intended for works-managers, although a third year may be taken. The conditions of entry are similar, the Entrance examination being in mathematics and English.

DEGREES IN SCIENCE.

THE UNIVERSITY OF LONDON.

Degrees are conferred by this University in each of eight faculties, of which medicine and science fall within our purview. Medicine has already been dealt with on page . In the faculty of science the degrees of B.Sc. and D.Sc. are conferred. The first step to each is

THE MATRICULATION EXAMINATION.

As mentioned under Medical Degrees, there are certain exemptions to this examination (see page). There are two types of the examination—one with Latin, and one without. The latter is now generally taken by science students. If Latin is not taken, another language apart from English must be included.

THE INTERMEDIATE EXAMINATION IN SCIENCE

is the next step, and it cannot be taken until a year after passing the Matriculation examination. Here there is a

choice of subjects—viz., four out of the following seven: *For a pass*, pure mathematics, mechanics, experimental physics, chemistry, botany, zoology, and geology. *For Honours* any one or more of the following: pure mathematics and mechanics, experimental physics, chemistry, botany, zoology.

The examination is held in July, and the fee is 5*l*. Particulars will be found in "Regulations Relating to Degrees in Science," to be obtained on application to the External Registrar, the University of London, South Kensington, London, S.W.

Two courses are now open to the student. A year after the Intermediate, and at least three years after matriculating, he may enter for

THE B.Sc. EXAMINATION,

selecting three out of ten prescribed subjects, which are: Pure mathematics, applied mathematics, astronomy, experimental physics, chemistry, botany, zoology, physiology, geology, and psychology. This may be taken for pass or honours. The examination is held on the fourth Monday in October yearly, and the fee is 5*l*.

The second method of getting the degree is new—viz., *the B.Sc. Degree by Research*. In this case the student must be nineteen, and he cannot enter until after passing the Intermediate, and two years before he proposes to proceed to the degree he must notify the University authorities of his intention to submit a thesis on the research which he is to undertake. His proposal must be approved by the Board of Studies, who consider his fitness to do the work. If approved the research student must for two years carry on his research in a school or schools or under a teacher or teachers of the University, if he be an internal student, or, if he be an external student, at some institution approved by the Senate. Other formalities have to be adhered to, all of which are detailed in the "Regulations" which can be obtained from the Secretary of the Senate, University of London, South Kensington, S.W.

The D.Sc. Degree is granted on a similar principle to that just detailed, two years after the B.Sc. has been taken. In addition to submitting a thesis, candidates for the degree are expected to be so fully conversant with the branch of science they profess as to be able, if required, to satisfy any test of their acquirements in that branch that it may be thought expedient to apply. The fee is 20*l*.

The degrees of B.Sc. and D.Sc. are also given in the faculties of engineering and economics.

B.Sc. (ENGINEERING).

It will suffice to say in regard to this that the Intermediate examination is in the following five subjects: (1) Mathematics; (2) mechanics; (3) either electricity and magnetism, or heat, with either sound or optics; (4) engineering drawing and design; (5) one of the following subjects: either heat with either sound or optics, or electricity and magnetism [if not taken under (3)]; chemistry; geology.

The Final examination is also in five subjects, viz.:

Group A (three only to be taken): Theory of machines and machine-design; theory of structures and structural design; strength and elasticity of materials; electrical technology.

Group B (at least two to be taken): Hydraulics; surveying; theory of heat-engines; design of electrical machinery and apparatus; generation, transmission, and distribution of electrical energy; mathematics; advanced theory of machines and structures.

OTHER UNIVERSITY DEGREES.

Birmingham University grants the B.Sc. degree in (1) pure science and (2) applied science, the latter in civil, mechanical, or electrical engineering, mining, and metallurgy. Candidates for any of these must pass the Matriculation examination held in June and September yearly. The subjects are:

1. English history and literature.

2. Mathematics.

3, 4, and 5. Three subjects (of which one must be a language) chosen from the following: Latin, Greek, French, German, Italian, Spanish, higher mathematics, experimental mechanics, chemistry, physical geography, botany, animal biology, geometrical drawing.

Candidates for degrees in engineering are required to take mechanics as the science subject, and they may take higher mathematics instead of one of the languages (2) and (3), but candidates for the degree in pure science must take French and German either when matriculating or subsequently before being admitted to the degree. Fee 2*l*. A few examinations are recognised in lieu of this one. Students must put in three sessions of study at the Birmingham University, the curriculum extends over three years, and there are Intermediate and Final examinations to pass. Fees 8*l*. The M.Sc. degree is granted on examination after one more academic year of study, and D.Sc. two years after the B.Sc. on the result of an original research. Dean, Professor J. H. Poynting, at the University.

Edinburgh University.—B.Sc. is granted in pure and applied science (engineering, public health, and agriculture). Candidates must pass the Preliminary examination in English and another language, mathematics, and dynamics, or a third language. The examination is to be held on September 29, 1905, and March 23, 1906, in Edinburgh. Fee 10*s*. 6*d*. A degree in arts exempts from it. The curriculum for the degree lasts for three academic years, including seven courses of instruction, of which at least four courses must be taken at the Edinburgh University and the others there or at an approved institution. There are two science examinations. Fees 6*l*. 6*s*. D.Sc. is granted five years after the B.Sc. by professing one subject, or on the basis of research. Fee 10*l*. 10*s*. Dean, Professor Geikie, at the University.

Royal University of Ireland.—Candidates may present themselves for the B.Sc. degree examination one academical year after graduating in any Faculty in the University—e.g., as B.A. They may select any one of the following groups of subjects: Mathematics and mathematical physics; mathematical physics and experimental physics; experimental physics and chemistry; chemistry and geology; geology, botany, and zoology; biology (including botany, zoology, and physiology). Fee 1*l*.

University of Manchester.—The degrees of B.Sc., M.Sc., and D.Sc. are conferred in the Faculty of Science. Candidates must have passed the Matriculation examination and have attended approved courses of study for three years subsequent to Matriculation. The subjects for the Intermediate examination are three of the following: Pure mathematics, applied mathematics, physics, chemistry, and biology. Two subjects may be taken in any one year, reserving the third subject for a subsequent year, provided that the three subjects are passed not less than one year before the Final examination. For the last named the subjects are two of the following: Pure and applied mathematics, physics, chemistry, zoology, botany, physiology, geology, mental and moral science (or engineering, applied mechanics and electricity, and agriculture). Certificates of satisfactory attendance on an approved class in Greek, Latin, French, or German must also be presented. There is also an honours B.Sc. degree granted in the faculty of science in one of the following schools: Mathematics; engineering; physics; chemistry; zoology; physiology; geology, mineralogy, and palæontology; botany. The "University Calendar," price 3*s*. (Sherratt & Hughes, Manchester), gives the ordinances and regulations regarding the M.Sc. and D.Sc. degrees. The University Registrar is Mr. Edward Fiddes, M.A.

GOVERNMENT SCIENCE EDUCATION.

Higher education in science is given in the Royal Colleges of Science in London and Dublin, which are wholly maintained by the Government, while grants are also made to various universities. About a year ago an offer of 100,000*l*. was made towards equipping a higher technical college which would more nearly approach the character of the German Charlottenburg. A committee was appointed by the Government, and a preliminary report recently issued recommended the co-ordination and treatment as constituent parts of the proposed college, of existing institutions such as the Royal College of Science and the Central Technical College. The report gives the following outline of the principal subjects which should be within the purview of the Institution:

As Preparatory Subjects.—Mathematics, physics, chemistry, and geology. Under the general heading of Civil Engineering.—Works of construction, mechanical en-

gineering, electrical engineering, mining engineering, marine engineering, and naval architecture; some branches of chemical technology, and metallurgy.

As illustrations of the kind of higher or more specialised applications of these subjects, some of which we suggest should be dealt with, we need only mention the applications of engineering to railway, dock, and hydraulic work; the development of electricity in the direction of electric traction, lighting, and telegraphy, and electro-chemistry. It would be impossible to provide for the whole of the above subjects at once. Some of the more specialised subjects, such as the advanced metallurgy of iron and steel, and certain branches of manufacturing chemistry would probably be better dealt with in institutions which are, or may be, established in the provinces.

In this section mention must be made of the excellent system by which science and arts classes are conducted all over the country, grants being made from the Government as the result of examination. The Board of Education, South Kensington, London, S.W., is the body charged with establishing, conducting, and inspecting schools and classes which earn grants for science and art education, and thus regulates the education of the country in a sense. Among the subjects taught at local science schools, and in which examinations are held yearly, are the following:

Agricultural science	Magnetism and electricity
Applied mechanics	Mathematics
Botany	Metallurgy
Building-construction	Mineralogy
Chemistry (inorganic and organic)	Naval architecture
General biology	Physiography
Geology	Rural economy
Geometry	Sound, light, and heat
Human physiology	Steam
Hygiene	Theoretical mechanics (solids and fluids)
Machine-construction	Zoology

To students who attend twenty-five lessons and pass an examination a certificate is awarded, book-prizes being added in the advanced stages, and bronze medals in the honours stages. Besides, the following scholarships are awarded annually to the best students in each of certain groups:

Royal Exhibitions (awarded to those who also obtain a success in advanced practical mathematics, or in the second or some higher stage, or a pass in honours).—50*l*. a year, and free admission to lectures and laboratories and instruction during the three years necessary for completing the Associateship course in the Royal College of Science, London, or the Royal College of Science, Dublin. Seven open each year.

National Scholarships.—25*s*. a week for the session of about forty weeks each year, and free admission for three years necessary to either of the above colleges. Twenty-one open each year. If either a Royal exhibitor or a National scholar is required to assist in teaching in the Royal College of Science, an extra 5*s*. a week is allowed.

Free Studentships.—Free admission for three years to the Royal College in London. Six open each year.

Certain railway fares are also paid. Local teachers will give students further information, but the particulars are detailed in the official Directory for conducting schools and classes in connection with the Board of Education, Part I., 2*d*.; Part II. (giving schedules of subjects), 4*d*., which may be obtained from the official publishers. The Royal College of Science, London, is the best-equipped school in the country, and we may note that Professor W. A. Tilden, F.R.S., the head of the chemical department, is a pharmaceutical chemist. It is here that Excise and Customs officers are trained for posts in the Government laboratories and elsewhere in the Services as chemists. These, with the King's scholars, occupy most of the places in the College, but a few private pupils are taken. The courses of instruction are in chemistry, engineering, and natural science, and last three years, the diploma of Associate (A.R.C.S. or A.R.S.M.) being granted to the fit.

The Royal College of Science for Ireland is under the Department of Agriculture and Technical Instruction. The College is situated at St. Stephen's Green, Dublin, and has three faculties—viz., Agriculture, Applied Chemistry, and Engineering. A limited number of scholarships are offered for competition among young men in Ireland who desire to acquire a thorough knowledge of technical agriculture. Each scholarship includes free admission to the first year's course of instruction in the College, a maintenance allowance of one guinea per week while in

attendance at the College, and one third-class railway fare to and from Dublin. Candidates, who should be between eighteen and thirty years of age, must make application on a form, which may be obtained from the Registrar, Royal College of Science, St. Stephen's Green, East Dublin. They must pass an examination in English, Latin or Irish, French or German, mathematics, practical agriculture, and ability to impart instruction. The course of instruction in applied chemistry is as follows:

First Year.—Chemistry, practical geometry, mathematics, mechanics, freehand and model drawing, and physics.

Second Year.—Chemistry, organic chemistry, mathematics, physics, mechanics, and mineralogy.

Third Year.—Chemistry and thermodynamics.

The fees for all Associate students are 15*l.* for the first year, and 20*l.* for the second and third years. Non-associate students are taken, for whom a separate schedule of fees has been arranged; in the chemical laboratory, for instance, the charge is from 2*l.* for a special course of a month to 12*l.* for the entire session.

DIPLOMAS IN OPTICS.

The fitting of spectacles is now a well-recognised part of the chemist's business, and, it may be added, not the least remunerative. Examinations in optics are held as under, and many chemists go in for the diplomas as a tangible proof of their abilities in spectacle-fitting. The diplomas do not confer any legal status on the holders. It may be mentioned, however, that whilst the practice of optics is open to all, efforts are being made by the Board of Opticians to promote a Bill in Parliament to regulate the trade, but it must be years before such a measure can become law. At present matters are at a standstill.

The Spectacle-makers' Company, London, hold examinations about twice a year, usually in February and November.

There are three *Divisions* of the Company's examinations, namely:

1. *The Special Examination*, taken in three sections:

(a) A written examination in elementary mathematics [a candidate will be excused this section (a) on production of a certificate from any of the following examining bodies, showing a sufficient knowledge in mathematics: The Oxford and Cambridge Local; Science and Arts, South Kensington, Mathematics, Stage II.; Matriculation of any University; College of Preceptors' First Class; Major Examination of the Pharmaceutical Society of Great Britain]. (b) A written examination in light, optics, the elementary theory of optical instruments, and in heat. (c) A *viva-voce* examination in the use and adjustment of the camera and projection apparatus, the telescope and binocular, the microscope, the sextant [a candidate who has been connected as Master or Assistant with the Optical industry for over seven years is entitled to be excused the whole of this Special examination. Chemists and druggists are exempt from (a), and pharmaceutical chemists from the whole of the Special examination; see C. & D., August 6, page 245].

2. *The General Examination*, taken in three sections: (d) A written examination in general and visual optics; (e) a *viva-voce* examination in general and visual optics; (f) a practical examination in the optical analysis of lenses, knowledge of materials employed and workmanship, and frame-fitting. [Until 1908, a candidate who has been engaged as Master or as Principal Assistant in fitting spectacles for at least ten years, and who is over thirty-five years of age, will be excused Section (d) of this General examination, as well as the whole of the Special examination, provided that he is entered for the examination in Sight-testing.]

3. *The Examination in Sight-testing*, taken in two sections: (g) A written examination in optics as applied to sight-testing; (h) a practical examination in the adaptation of lenses to correct errors of vision.

In the near future the Company will require evidence of experience before admitting a candidate to the examination.

The Diplomas.—The diploma in General Optics is conferred on a candidate who has passed the General examination (preceded by the Special, if necessary). This diploma, however, will not be granted alone unless the candidate undertakes not to engage in sight-testing. The diploma in Sight-testing will only be granted to a candidate who has already gained the diploma in General Optics.

The following is the syllabus of the examinations:

(1) *For the Special Examination.*—(a) Elementary Mathematics as applied to Optics.—Arithmetic; algebra to

quadratic equations; equations; the measurement of trigonometrical angles; the elementary use of tables of natural sines, cosines, and tangents, and of tables of logarithms and reciprocals. Text-books: "Elementary Algebra," Hall and Knight; "Elementary Trigonometry," Hamblin Smith. (b) Light and Heat.—Elementary laws of light; laws of refraction; the index of refraction; refraction as applied to lenses and prisms; conjugate foci; formation of images; laws of reflection as applied to curved and plane mirrors; umbra and penumbra; photometry; dispersion and achromatism; lens-systems and their aberrations; the elementary theory of optical instruments; the construction and uses of instruments for measuring temperature, atmospheric pressure, and moisture. Text-books: "Heat and Light," Glazebrook; "Optical Tables and Data," Silvanus P. Thompson. (c) Practical work with Instruments.—A general acquaintance with the construction and use of the camera, projection-apparatus, telescope, binocular, microscope, and sextant; use of the Vernier. Text-book: "Drawing, Optical, and Surveying Instruments," Heather.

2. *For the General Examination (formerly termed the "Modified").*—(d) and (e) Light.—Elementary laws of light; laws of refraction; the index of refraction; refraction as applied to lenses and prisms; conjugate foci; formation of images; laws of reflection as applied to curved and plane mirrors. Text-books: "Heat and Light," Glazebrook; "Optical Tables and Data," Silvanus P. Thompson. (d) and (e) Visual Optics.—General anatomy of the human eye; the course of light passing through the media of the eye alone and modified by spherical and cylindrical lenses and prisms; hypermetropia; myopia; astigmatism; presbyopia; instruments commonly used for determining the refraction of the eye; trial lenses; test-types; astigmatism chart; the optometer; the principle of the ophthalmoscope and retinoscope; transposing. Text-book: "Refraction of the Eye," Hartridge. (f) Practical Work in Visual Optics.—Testing a plane surface; measurement of focal length of spherical, cylindrical, and compound lenses; use of the spherometer or lens-meter; determination of the axis of a cylinder, and the angle of deviation of a prism; analysis and neutralisation of spherical, cylindrical, and compound lenses, and lenses combined with prisms; centering and adjustment of spectacle lenses and frames; face-measurement for spectacles; knowledge of the materials and of the workmanship employed in the manufacture of lenses and frames; use of pebble-tester; reading and writing prescriptions for lenses and frames. Text-book: "Taylor and Baxter's "Key to Sight-testing."

3. *For the Examination in Sight-testing.*—(g) The theory and methods of the determination and correction of errors of refraction and accommodation in the healthy human eye. (h) The determination of visual acuity; the practical correction of errors of refraction and accommodation by subjective methods; muscle-testing; a knowledge of the instruments used for objective sight-testing; colour-blindness. (A candidate is permitted to use his own trial-case and test-charts, and may employ such methods—whether subjective or objective—as he is accustomed to, in order to arrive at the correction needed by the subjects he is required to test at the examination.)

In addition to the books mentioned above, the following are recommended to candidates: "Contributions to Photographic Optics," by Professor O. Lummer; "Photographic Optics," by R. S. Cole; "Optics," by A. S. Percival; "Practical Physics," by Glazebrook; "The microscope," by Gage; "Ophthalmological Prisms," by E. E. Maddox; "Physics," by Ganot.

The fees are (1) for the Special examination 2*l.* 2*s.*, (2) for the General examination 3*l.* 3*s.*, (3) for the Sight-testing examination 2*l.* 12*s.* 6*d.* The re-examination fee is 1*l.* 1*s.* Further particulars can be had from Col. T. Davies Sewell, 11 Temple House, Temple Avenue, E.C.

The Society of Chemist-Opticians, which looks after the interests of chemist-opticians, has succeeded in getting certain concessions from the Spectacle-makers' Company in regard to these examinations. Pharmaceutical chemists are exempt from the whole of the "special" examination, while chemists and druggists are excused from passing in the subjects of mathematics and heat in the above-mentioned examination. The Secretary of the Association, Mr. J. Harcombe Cuff, 25 Friern Barnet Road, New Southgate, N., will furnish further particulars.

The British Optical Association (Incorporated), 199 Piccadilly, W., have also an examination-scheme. In the B.O.A. scheme there are three grades of examination—the optic, dioptric, and fellowship—for which the fees are 1*l.*, three, and five guineas. The optic grade has to be passed by the candidate before he can pass to the higher

grades. The examinations are held twice yearly in London. Candidates must be of British nationality. A new syllabus has just been issued, and certain concessions to chemists have been made in the first grade of the examination. The Secretary is Mr. J. H. Sutcliffe.

OPTICAL INSTRUCTION.

THE NORTHAMPTON INSTITUTE, *Clerkenwell*, E.C.—At this institute day and evening courses of optical lectures and practical instruction, beginning in October and lasting till June of the following year, are held. The course includes applied, visual, and physiological optics and optical instruments. The facilities for acquiring optical instruction at this Institute are exceptional. Particulars can be had from Dr. R. Mullineux Walmsley, the Principal.

MR. LIONEL LAURANCE, *Orthos House*, 21 John Street, Bedford Row, W.C., conducts correspondence and personal classes in visual optics in preparation for the examinations of the Worshipful Company of Spectacle-makers. The fees vary from four to eight guineas, according to the course that is taken; the Special examination of the S.M.C. (without heat) is 6*l.* 6*s.*, other courses being in proportion. Mr. Laurance is official instructor to the S.M.C., also to the National Association of Goldsmiths, and the Society of Chemist-Opticians, to members of which, by special arrangement, a substantial reduction of fees is made.

THE ANGLO-AMERICAN OPTICAL COMPANY, 47 Hatton Garden, E.C., conduct a school of optics by correspondence and personal tuition.

MR. W. BANKS, 70 Russell Street, Bolton, also prepares candidates for the S.M.C. and B.O.A. examinations. The fee for twelve lessons for the S.M.C. General examination and sight-testing is 3*l.* 3*s.*

METROPOLITAN SCIENCE SCHOOLS.

DAY CLASSES.

CENTRAL TECHNICAL COLLEGE, *Exhibition Road*, S.W.—There are three diploma courses, each of three years: (1) Civil and mechanical engineering; (2) electrical engineering; (3) chemistry. Fees 30*l.* per session.

TECHNICAL COLLEGE, *Leonard Street*, City Road, E.C.—The course extends to two years, except in the case of applied chemistry, which occupies three years. Fees 15*l.* per session. Evening classes are held at moderate fees. Principal, Professor Silvanus P. Thompson.

UNIVERSITY COLLEGE, LONDON, *Gower Street*, W.C.—Faculty of Science. The tuition-fees for a complete three-year course for B.Sc. amount to about 100*l.* Principal, Dr. T. Gregory Foster; Dean of the Faculty, Professor J. N. Collie, Ph.D., F.R.S.

KING'S COLLEGE, STRAND, W.C.—Fees are about the same as at University College. Evening classes are held. Professor R. T. Hewlett, of this College, holds occasional courses in practical and clinical bacteriology which are useful for pharmacists. The fee is 3*l.* 3*s.*

EVENING CLASSES.

The London student is as lucky as the provincial one in regard to opportunities for work and study. Whatever his calling in life, he can, if he will, find means of advancing himself therein by study, frequently in the district in which he resides. The following notes on some of the evening schools and institutions in London demonstrate that the pharmaceutical student is well cared for outside the special schools which cater for his requirements. In nearly all of the places where evening classes are held it is possible to obtain instruction in most of the subjects of the Minor examination at moderate fees, so that any apprentice or assistant may greatly increase his chance of passing if, having negotiated the Preliminary, he commences the study of the more important subjects from the early days of his apprenticeship. Moreover, most of the polytechnics and technical institutions offer scholarships and prizes which provide him with free tuition or reduce his expenses to a negligible amount. In some cases half fees only are charged apprentices, and this concession is sometimes extended to include assistants.

It is possible at many of the institutions to take the London B.Sc. by evening study alone, although it is not advisable if day-work can by any means be accomplished.

The fees vary usually between 6*l.* and 10*l.* for the complete course. Physics, chemistry, and botany classes up to the Minor requirements can usually be attended at fees varying from 7*s.* 6*d.* to 20*s.* per session, and for the Major from 12*s.* 6*d.* to 30*s.* for physics, 21*s.* to 45*s.* for chemistry, and 10*s.* 6*d.* to 37*s.*, or with field classes 45*s.*, for botany.

BIRKBECK COLLEGE, *Bream's Buildings*, Chancery Lane, E.C.

The composition-fee for the London B.Sc., three years' course, is 16*l.*, and for the Conjoint Board, Dental, and L.S.A. examinations 9*l.* Evening classes in chemistry, botany, and physics are held at fees varying from 27*s.* for Stage I. to 50*s.* for Stage III. (Board of Education), including practical and field work.

SIR JOHN CASS TECHNICAL INSTITUTE, *Jewry Street*, Aldgate, E.C.

Fees for classes in science subjects are 7*s.* 6*d.* for members and 10*s.* for non-members for all grades, and including laboratory-work. The composition-fee for a four-year course for the London B.Sc. is 4*l.* 2*s.* 6*d.*

CITY OF LONDON COLLEGE, *White Street*, Moorfields, E.C.

Special courses in chemistry for the Minor and Conjoint Board are held at 42*s.* and 25*s.* respectively, to which must be added a 6*s.* membership-fee. Lectures and laboratory-work in all science subjects. Fees, 4*s.* and 17*s.* respectively, with 3*s.* extra for non-members.

EAST LONDON COLLEGE, *Mile End Road*, E.

Evening University courses in science, under Professors R. A. Lehfeldt and J. T. Hewitt, cost 10*l.* 10*s.* A four-year course in general chemistry is also provided, the total fees being about 4*l.* At the Bow and Bromley branch Mr. J. H. Harrison lectures on botany; the fees for practical work and lectures are 4*s.* for Stages I. and II., and 10*s.* 6*d.* for Stage III. A two-month summer class is also held in practical British botany at a fee of 1*s.* 6*d.*

SOUTH-WESTERN POLYTECHNIC, *Manresa Road*, Chelsea, S.W.

Suitable courses in chemistry, botany, and materia medica for the Minor, Major, Conjoint Board, Dental Institute, and Society of Apothecaries' examinations are provided at 35*s.* per session. The complete B.Sc.(Lond.) course, including a special language class, costs 6*l.* 10*s.*

WEST HAM TECHNICAL INSTITUTE, *Romford Road*, E.

Lectures and laboratory-work in pharmacy, materia medica, and dispensing are held on two evenings in the week, from 7 to 10 P.M., with a lecture and practical class in chemistry on another evening for the same time, the inclusive fee for the session (October to July) being 42*s.* Mr. W. W. Hellyer, chemist and druggist, is the lecturer. Lecture and laboratory classes in chemistry following the London University syllabuses are provided at inclusive fees of 11*s.* 6*d.* for junior classes and 14*s.* for senior classes per session. Evening degree courses in science, extending over three years, cost about 9*l.* Apprentices residing in the borough are charged half fees (this includes assistants).

BATTERSEA POLYTECHNIC, *Battersea Park Road*, S.W.

Lecture and laboratory courses in chemistry cost 10*s.* per session. Special arrangements for laboratory-work for pharmaceutical chemists, students, and others are made on Wednesdays, permitting eight hours' continuous work, the fee per session being 27*s.* Laboratory instruction in technical and commercial analysis is given at a fee of 12*s.* per session. Courses for the Inter. Sc. and Final B.Sc. (London), including practical work, 3*l.* 10*s.* and 4*l.* per session respectively.

Evening science classes are also held at the Goldsmiths' College, *New Cross*, S.E. (of which Dr. Arthur Lapworth is the Director); Northern Polytechnic, *Holloway Road*, Islington; Wandsworth Technical Institute, *High Street*, Wandsworth, S.W.; and the Carpenters' Institute, *Stratford*, E. For particulars apply to the respective Secretaries.

PROVINCIAL SCIENCE SCHOOLS.

The subjoined is not a complete list of the provincial schools, but it suffices to show students in the towns named

that the opportunities for study are at their doors. They should call at the Colleges for full information.

ABERYSTWYTH.—*University College of Wales*.—Composition-fee for the science course, 10*l.* per session, exclusive of practical work.

BANGOR.—*University College of North Wales*.—Terms as at Aberystwyth.

BARROW-IN-FURNESS.—*Technical Schools, Abbey Road*.

BELFAST.—*Queen's College*.—Arrangements similar to Cork (*q.v.*).

BIRMINGHAM.—*Municipal Technical School, Suffolk Street*.—Evening classes, some of which are suitable for pharmacy students.

BRADFORD.—*Municipal Technical College*.

BRISTOL.—*University College*.—The science courses are arranged for the examinations of the London University.

CARDIFF.—*University College of South Wales and Monmouthshire*.—Fees for science classes, 13*l.* 13*s.* per session.

CORK.—*Queen's College*.—Courses for the science degrees of R.U.I. and London are given. Registrar, Mr. Alexander Jack, M.A.

DUBLIN.—*Royal College of Science*.—The fees for a three-years' course for A.R.C.Sc.I. are 55*l.* Registrar, Mr. P. A. E. Dowling.

DUNDEE.—*University College*.—Botany, chemistry, and physics are taught in day classes, and chemical technology in the evening, at the Technical Institute. Secretary, Mr. R. N. Kerr.

EDINBURGH.—*Heriot-Watt College, Chambers Street*.—Here very efficient science courses are arranged in day and evening classes at low fees.

GLASGOW.—*Technical College*.—Day and evening classes in chemistry, applied chemistry, mechanical and electrical engineering, etc. Fees for three years' course, about 40*l.* to 50*l.*

LEEDS.—*University*.—The instruction is adapted to the University degrees and diplomas in science. There are complete courses of instruction in the faculties of arts, science, medicine, law, and technology.

LIVERPOOL.—*University of Liverpool*.—Courses for degrees in science or special purposes.

MANCHESTER.—*University*.—The three-years' course for B.Sc. in applied chemistry costs about 70*l.* There are evening classes, including a course in chemistry (fee 4*l.* 4*s.*) and botany (fee 2*l.* 2*s.*). The *School of Technology* also gives sound education in science (Principal, Professor Pope, F.R.S.).

NEWCASTLE-UPON-TYNE.—*Armstrong College*.—Fees for curriculum of B.Sc. Durham, 60*l.* Day and evening classes are held. Secretary, Mr. F. H. Pruen.

NOTTINGHAM.—*University College*.—Day and evening science courses are given, including various special courses in chemistry. Registrar, Mr. P. H. Stevenson.

PLYMOUTH.—*Municipal Science, Art, and Technical Schools*.

SHEFFIELD.—*University*.—Day and evening courses in most science subjects are given at low fees (*e.g.*, chemistry 1*l.* 10*s.* per session). Registrar, Mr. W. M. Gibbons.

WOLVERHAMPTON.—*Municipal Science and Technical School*.—At this school there is a complete range of classes available for pharmaceutical and science students.

Experiences and Opinions.

The Claims of Apprentices.

Probably the indictment most often hurled at the British Pharmaceutical Society is the one that in no way does it serve the interests of its members, that it neither gives them anything in return for their fees, nor affords them any preferential tariff—to speak in terms of current political jargon—to protect them against the foreigner in the shape of the limited company, the company's assistant, or even against the unqualified man. Now, there is one branch of the pharmaceutical tree that really does deserve a little more care, a little more fertilising—in some cases perhaps even a little more pruning—than it gets at the hands of the head gardeners of Bloomsbury Square, and that branch is the apprentice. We hear on all sides the moan that apprentices are getting rarer every year, and that when obtainable they are not of the class to do credit to themselves or their masters. The moan is, in the writer's estimation, excellently well justified; it is also his opinion that the cause lies very largely indeed with the employer, and also with the parent Society.

From an account in the *C. & D.* recently of the meeting of the Deutscher Apotheker-Verein at Hamburg, one noted with interest that the rights of the apprentice seem to be decidedly more safeguarded with our Teutonic brethren than with us.

The paragraph in question was:

As a result of repeated petitions to the Prussian Government, the Prussian Minister of Education has intimated that in future it will be necessary for a single-handed pharmacist to obtain general permission only to engage a pupil, and not, as hitherto, for each separate case.

The inference is that in Prussia the apprenticing of a lad in pharmacy concerns not only the lad, his employer, and his parent—I place the three in the order of importance which they occupy in my mind—but also, and primarily, the State. Now, here in this free country the pharmacist has no recognition or regulation at the hands of the State. We are free chemists and druggists, free pharmaceutical chemists, free to substitute, free to prescribe, free *not* to educate our apprentices. Here surely, if anywhere, the Pharmaceutical Society may wisely and rightfully step in and play the part of the State in Prussia.

Now, in the official rules of the Society it is stated, among other requirements, that before entering for the Minor exam. the pharmacist in embryo "must have been for three years registered and employed as an apprentice or student, or have otherwise for three years been practically engaged in the translation and dispensing of prescriptions." In the large majority of cases it will probably be found that this evidence of association with things pharmaceutical is furnished by an indenture. Obviously, then, the indenture is a matter of great import to the apprentice, and should be also to the parent. If an average indenture drawn up by a solicitor be examined,

it will be generally found that while very definite in some things it is delightfully vague in others; it will carefully lay down the hours of work and recreation, it will—in the older forms, at any rate—strictly interdict his entering the state of holy matrimony on the one hand and gaming-houses on the other; it will say very little of the details of instruction to be imparted by the master, nothing at all of the paint-mixing, paraffin-getting, etc. A word to the wise parent is sufficient.

It is the great failing of the present-day assistant that whatever else he knows, he certainly knows very little of pharmacy. Most of us will also admit that if pharmacy should be learnt at all it should be learnt during apprenticeship. It matters little whether our embryo pharmacist go to one of our numerous, and in most cases excellent, unofficial schools of pharmacy for three months or six, or to the official school for nine, if he has not learnt pharmacy before going there he will not learn it while there; he must learn it at the dispensing-counter of the shop, not at the bench in the "pharmacy lab." The Society should step in at the outset and see that its members do not undertake the responsibility of shaping or mis-shaping three years of a lad's life without the knowledge that if they do wilfully mis-shape the opprobrium will fall not only on the failed candidate in the examination-room, not only on the professor or coach who has striven hard for half a year or less to make up the leeway of three years, but on the so-called steersman who never really touched the helm during the three years. Let the Society keep a register of all pharmacies where apprentices are kept, the owners of which pharmacies undertake to provide a definite and officially approved course of pharmacy education, and let certain funds be laid aside to provide an inspector or two to visit periodically and ensure the carrying-out of such a course. In the long run we should produce a better and more practical race of pharmacists than ever a pharmacy research laboratory will produce. Let the pharmacist also recognise that it is his duty to see personally that his apprentices attend the local science classes, instead, as is too frequently the case, of grumbling at letting the lad off half an hour earlier in the evening to attend the classes.—(B. R. J.)

English and German Apprenticeship.

Comparisons, while odious, are nevertheless instructive, and from the Germans we may learn a great deal, both as regards the making of chemists and the manufacture of chemicals. If a new drug appears on the market, it is almost a foregone conclusion that it was made in Germany. Not that it is anything the worse for having its home in the Fatherland, but the Briton naturally wonders why it is that in the science of chemistry we must always limp so far behind our German cousins. It is undoubtedly in the making of chemists that their superiority mainly lies, the manufacture of chemicals

being of altogether subordinate importance. It is true that many receive a special course of training in chemistry without passing through the laboratory of the apothecary, but the laboratory of the apothecary is the recruiting-ground, and it is often there that the inquisitiveness of the chemist first manifests itself.

What does the English youth learn during his apprenticeship? He learns that Epsom salt is sulphate of magnesium, that saccharum is another name for sugar, that both are very soluble in water, but there or thereabouts his knowledge at the completion of his apprenticeship generally ends. If he be a studious youth (*avis rara*), he may learn a deal more, but the point is this—that he has the opportunity of finishing a four-years' apprenticeship without learning a scrap of chemistry, and he generally avails himself of the opportunity. This the German apprentice cannot do. He joins the army of apothecaries, and is under supervision from headquarters. The chemist, if he will have an apprentice at all, must have him educated to be a chemist. He is as responsible for the education of his apprentice as the English father is responsible for the education of his child. There is an Inspector of Apothecaries in Germany as there is an Inspector of Schools in England, and the result is that the German youth at the end of his apprenticeship can pass an examination which, it is safe to say, not one in fifty English youths, after a like term of apprenticeship, could pass. The German chemist himself may, and often does, instruct the youth. In any case he must superintend his instruction. The words "Inspector" and "must" do not sound well in the ear of the free-born Briton, and the law in Germany may be carried in some cases too far; but good laws in time become merely good customs, the element of "must" is eliminated, and the supervision of the education of his apprentice may become to the chemist but as a part of his general supervision. A course of quiet work extending over many years is incomparably better than a course of cramming extending over as many months. But to limit the argument strictly to the time of apprenticeship, the mind of the German youth from the first day of his apprenticeship is gradually moulded to become the mind of a chemist, as a soil is gradually wrought up to receive a certain seed.—(T. H.)

An Apprentice's Story.

In the present article, writes a young contributor, I will endeavour to sketch briefly the career of a chemist from the time of his apprenticeship to the passing of the Minor, viewing it rather from the personal or human standpoint than from that of a scientific training. Imagine a northern market town, with a population of ten to fifteen thousand, and boasting some three chemists' shops all in various stages of progression or decay. The proprietor of one is an elderly man who wears glasses, and in winter-time affects a smoking-cap, which adds greatly to his standing among his fellow-citizens. There appears in the advertisement-columns of the local weekly an announcement that this respected seer desires "a bright youth to learn the drug-business." Among the applicants is one youth who hugs fondly a huge volume, the fly-leaf of which proclaims to all whom it may concern that "John White received this prize for attainments in the elements of chemistry." An agreement is arrived at with the seer, and the Martindale in embryo arrives on the following Monday morning to begin his life-work. He is punctual, and has to wait some time before the senior apprentice puts in an appearance. On the previous evening this same "senior" has brought to the fore all the available chemical apparatus in the establishment; there are two Florence flasks, a bent retort-stand, an old spirit-lamp, and a lamp-chimney which serves as a percolator. As the novice gazes upon these scientific instruments his heart swells within him, and dreams of Faraday fill his imagination. May he not yet rival the old masters in fame, and leave a name which will be remembered in the world's history? But, alas, he soon learns that all is Faradaic, for the first two years pass in a long round of sweepings and dustings, with pill-making in between. At the end of the two years he begins to store his mind with the knowledge which is to serve him in after-years; the mysteries of tincture-making and the finer operations of pharmacy are made plain; and though his master may be a little antiquated in his methods, yet the long experience and sound common-sense of the old chemist make him a teacher whom no one need be ashamed to follow. At the end of four years, our friend, now a youth of nineteen or so, is forced out into the greater world. Country masters as a rule are unwilling to pay a youth of their own training the current wage of the recognised junior assistant, and this begets the necessity of going forth into pastures new. In a large city let us suppose the case of one who cannot afford the luxury of day classes. His shop-hours are on an average from 9 A.M. till 9 P.M., the late night on Saturdays being compensated for by an evening off at six. On four nights of the week he attends classes which are not

over till eleven, so that we may safely compute the working hours of this junior at eighty per week, not to speak of Sunday duty and home-lessons. But class-work has its compensations, for there men of diverse character meet, and mayhap one makes lifelong friends. Then the dread Minor looms in the near future. The anxious youth devours botany with dinner and chemistry with tea, while the pestle goes round merrily to the tune of "Spermaphyta," "Angiosperm." At length the "first" day, that terror of terrors, arrives; our hero presents himself at the chosen centre, and does his best; but too often is he informed next day, in a curtly worded note, that "the work he has already done is such that it will be impossible for him to satisfy the examiners." And he paid ten guineas for this! His whole spirit rises in rebellion against the seeming harshness of the verdict. But quieter reason prevails; he buckles to again, and at length emerges a conqueror in the strife. But what now of his Faraday dreams and overmastering ambition? We find an answer in the comparatively small number who go forward to the Major examination. We began with a scientist in embryo, but too often the final product is neither scientist nor commercial man—on the one hand, denied recognition as a professional man, on the other refusing to class himself with the rank-and-file of shopkeepers. I have spoken of things as they appear to the younger generation of chemists, with the hope that this brief sketch may in some slight degree impress the powers that be with the necessity for a radical change in the training and examination of pharmaceutical students. (103/29.)

Home Study.

By A COUNTRY STUDENT.

My experience is, perhaps, common to others who are situated in the country, where laboratories, classes, and libraries are too remote to be accessible. Being an assistant indoors, my spare time is limited, but I manage to devote about four hours daily to study. With the consent of the principal, I converted a spare part of one of the warehouses into a laboratory of a kind. This had formerly been used for photographic purposes, and possessed a sink and water-supply. I had a gas-pipe run up from the meter. The odd bottles which accumulate in a business furnished all I required in that direction. Most of the reagents were, of course, to be had on the premises, and I found that 10% (spent with Messrs. Baird & Tatlock) brought me all I wanted in the way of botanical and chemical material and apparatus, which included a fairly good balance (100 grams to $\frac{1}{2}$ mgm). I find the use of Jena glass beakers and flasks to be most economical in the end, as, though initially more expensive, they "live" longer, and one can evaporate to dryness in them.

I have a patch of garden-ground, where I grow a few specimens. I make a point of doing some of the simpler experiments in physiological botany, such as the measurement of root-pressure and the influence of the various plant-foods. Botanical specimens abound in the neighbourhood, and I collect and examine as many as time permits. Town residents will envy me the charm of this.

For organic chemistry I use Perkin and Kipping's "Chemistry," supplemented by Berntsen. During the winter I worked through the aromatic compounds mentioned in Cohen's book, and most of the fatty preparations, not always getting good yields, but keeping specimens of each in the flat-bottomed tubes sold for the purpose. I intend to work through the B.P. preparations in the same manner. The method is laborious, but for a fellow working alone I don't think there is a better way. The greatest difficulty I have to contend with—others perhaps find the same—is that the knowledge one gains by reading alone is hard to retain, unless one takes steps to make it real. The remedy would be, I should think, to get someone to read with or to coach. The apprentice, where he can be had, would be a most convenient subject to practise upon.

For inorganic I read Remsen's larger book. This is rather expensive, but it reads like a novel, and is singularly free from the dryness of the examination text-book, which makes the private student's life such a burden. If the student can obtain such a book as a prize in the "Students' Corner" (as I had the good fortune to do), so much the better.

For physical chemistry I use Ostwald; for quantitative, Clowes and Coleman; for qualitative, Fenton (although not including cerium and lithium), and the "Corner" are all a man need desire.

In botany I use Vine's "Text-book" and his "Physiology," Bower's "Practical," and Willis's "Flowering Plants" (the latter again a prize in the "Corner"). For physics, Jamin and Bouty's "Cours" is excellent reading, if one's French is not too rusty, and if time permits the mathematical parts to be followed. For materia medica, pharmacy, and dispensing I rely upon shop-experience and the ordinary text-books which are familiar to all. I am well aware that the books I am using are beyond what is required for the Minor, but as I have already passed the London Inter. Science I hope that, if

I have the good fortune to qualify, I may resume my reading for the B.Sc.

With regard to the "Students' Corner," I must say that the new regulation is admirable. It is no doubt stimulating to meet in competition a better man than oneself, but, at the same time, we private students who have no other guide than the text-books, and who cannot afford, or have no access to, such luxuries as the spectroscope, will feel great encouragement in knowing that we meet on more equitable terms. Not having done my qualitative at school very carefully, I found the "Corner" a splendid corrective to such habits as the indiscriminate employment of reagents or a too liberal use of material, habits which deserve the full opprobrium of the term "test-tubing." As most of us know by painful experience, a single slip, when operating upon the meagre gram or so that Dr. Dobbin in his wisdom allows us, may spoil one's chance. I think, too, that it makes one particularly attentive to confirmatory tests, in order to avoid the mortifying experience—to say the least—of giving a detailed description of constituents which are not there. I found the most instructive way to employ the "Corner" was to draw out on a large sheet of paper the analytical tables from any good book, and then add the gist of the excellent notes which have appeared from time to time in back numbers of the *C. & D.*, and also to make myself familiar with all the facts connected with each constituent detected. For instance, I should thank an examiner to ask me about cryolite. Dr. Dobbin's remarks were most helpful to me, and never anything but encouraging. I make a note of the tests and methods which are new to me—such as the NaHT test for K, the detection of traces of Ca, Mg, CO₂, the use of extracted filter-papers, Carnot's test for K, etc. (in connection with the latter I have never understood how Bi(NO₃)₃ can exist in aq. sol., as I thought that the basic salt was always formed). I found pure chemicals to be

absolutely indispensable, and I was led into great trouble with such reagents as CaCl₂, Na₂CO₃, AmCl, turmeric, until I used specimens of established purity. I learn something new with each month's report, and shall be sorry when I have to discontinue the exercises.—(F. J. W.)

Westminster Wisdom.

(From our Parliamentary Representative.)

THE REVENUE BILL.

The Session is at an end, and among the measures which the Government had to abandon for lack of time was the Revenue Bill. As at present advised, it is the intention of the Government to revive the Bill next Session, when it is hoped that effect may be given to the recommendations of the Committee which inquired into the use of alcohol for industrial purposes.

ARSENICAL POISONING.

Sir Cuthbert Quilter asked the President of the Local Government Board, in an unstarred question on Tuesday, whether, with a view to giving effect to the recommendations of the Royal Commission on Arsenical Poisoning, the arrangements foreshadowed in his predecessor's statement have now been effected; whether the special inspector and assistant inspector, for whose expenses provision was made in the Estimates this year, have been appointed; and, if so, what was the precise nature of the duties allotted to them.

Mr. Gerald Balfour, in a printed answer, stated: An inspector has been appointed, and arrangements are being proceeded with as to an assistant inspector. It is the duty of the inspector to advise the Local Government Board as to the administration of the Sale of Food and Drugs Acts and other similar Acts; to deal with matters relating to the purity and adulteration of food which are brought to the Board's notice by public analysts, medical officers of health, and others; to obtain information upon special questions relating to the purity and adulteration of food and the use of deleterious substances therein; and to make suitable inquiries and investigations for this purpose. The inspector will make a report, which will be included in the

annual report of the Board's medical officer, under whose direction he will act.

THE TRADE-MARKS BILL

passed the third reading in the House of Lords on August 4, and the Lords' amendments were considered and agreed to in the House of Commons on August 8.

MEDICAL ACT (1886) AMENDMENT BILL.

This Bill, which is one enabling reciprocal arrangements to be entered into with federal or provincial Governments, was read a second time in the House of Commons on August 4, and passed the third reading on August 8.

EPIZOOTIC LYMPHANGITIS.

Mr. Cullinan, on August 7, asked the President of the Board of Agriculture if he would state the several places in which South African horse-disease had been, and was at present, in Great Britain; the precautions taken to prevent the disease spreading, including the number of military and private establishments quarantined and shows and race-meetings stopped because of its prevalence.

Mr. Fellowes, replying, said: Seventeen outbreaks of epizootic lymphangitis have been reported from the following places—namely, London (3), Hampshire (3), Hertfordshire (2), Essex (2), Kent, Nottingham, Stafford, Suffolk, Surrey, Wilts, and Lanark one each. All animals returned as affected have been disposed of, either by slaughter or otherwise, and no case of the disease is now known to exist amongst civilian horses. The precautions to be taken to prevent the spread of the disease are set out in the Epizootic Lymphangitis Order of 1904, a copy of which I shall be glad to send to the hon. member. It has not been necessary for us to interfere in any way with the holding of horse-shows or race-meetings. Any question as to the existence of this disease in military establishments

WINNERS OF THE FAIRCHILD



CRANVILLE SHAW



S. LAMPLOUGH SCOTT



JOHN HAIG



MISS A.M. ROW



J.J. LYONS.

SCHOLARSHIP AND PRIZES

We gave last week (page 244) the results of the first examination held in connection with the Fairchild Scholarship scheme. Mr. Scott is the winner of the 50% scholarship, while Mr. Shaw, Mr. Lyons, Mr. Haig, and Mr. Davies obtained 5% prizes. Miss Row was awarded a special prize of books. Mr. Davies was not able to send us his photograph for inclusion in this issue.

should be addressed to my right hon. friend the Secretary of State for War.

PLACE AUX DAMES.

Mr. Lough asked the First Lord of the Treasury whether, owing to the refusal of the Universities of Oxford and Cambridge to grant to women degrees corresponding to their courses of study, and the opening by the University of Dublin of all its courses of study, degrees, prizes, fellowships, and other offices to women, nearly 200 Englishwomen from Oxford and Cambridge had gone to Dublin since 1904 for their degrees; and whether he would take steps to induce the Universities of Oxford and Cambridge to grant to women the degrees to which their educational proficiency might entitle them.

Mr. Balfour, in reply, said: I understand that the position is that ladies get education at Oxford and Cambridge and pay their fees for their degrees at Trinity College, Dublin. That seems to be a good arrangement for Trinity College, Dublin. As regards Oxford and Cambridge, the Government have no power to offer advice to these great and learned bodies, and I shrink from giving any pledge that legislation will be introduced on the subject.

OPIMUM IN BURMA AND TIBET.

In the House of Commons, on August 8, Mr. H. Wilson asked the Secretary of State for India if he could state the new conditions adopted for the Government sale of opium in Burma; in what respect they differed from the system previously in existence.

Mr. Brodrick, replying, said: Opium is now sold by selected vendors at a fixed price and under stringent regulations supervised by resident Excise officers. Formerly the licences were auctioned to the highest bidders, who were under no effective restrictions, and were not supervised. The object of the new system is to prevent the sale of contraband opium, and to have more hold over the licensed vendors. The number of licences has also been increased, while the preventive staff in the districts has been greatly strengthened. The new system is described in the Burma administration reports for 1902-3 and 1903-4, and in the Burma Opium Manual.

Mr. H. Wilson also asked if the Secretary of State for India could state whether, in the new treaty-arrangements recently concluded with Tibet, opium was made an article of commerce; if so, under what tariff or other regulations; and where the details could be found.

Mr. Brodrick to this replied: The Tibetan Convention of September 7, 1904, provided for an amendment of the regulations of 1893 as to trade, but the question of such amendment has not yet been discussed with the Tibetan Government. The regulations of 1893 provided that the import and export trades in certain articles, including narcotic drugs, "may, at the option of either Government, be entirely prohibited or permitted only on such conditions as either Government on their own side may think fit to impose." The trade-returns of the Government of India and those of the Chinese Imperial Customs Department show that there is no traffic in opium between India and Tibet.

Trade Notes.

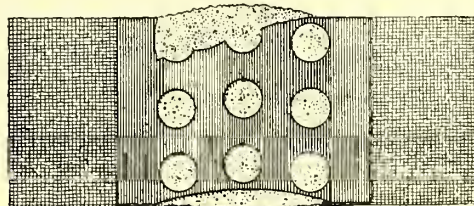
THE APOLLINARIS Co. have supplied large quantities of Apollinaris water for use at the festivities in honour of the French Fleet's visit. Apollinaris was prominent on the tables at Portsmouth, the Guildhall, and Westminster Hall.

"THE SCIENTIFIC ROLL."—Mr. A. Ramsay, 4 Cowper Road, Acton, W., is making a special offer to those who subscribe to the reference work which he is bringing out under the title of "The Scientific Roll." Some of the issues in Vol. I. have been reviewed in THE CHEMIST AND DRUGGIST.

"SAVOY" INVALID TRAY.—Messrs. John Harper & Co., Ltd., Albion Works, Willenhall, Staffs, call our attention to a detachable bracket and tray which they have recently patented. The tray is for invalids' use and is circular in form. It is intended to clip on to the uprights of a bedstead, the clip being so arranged that the tray can be turned down when not in use.

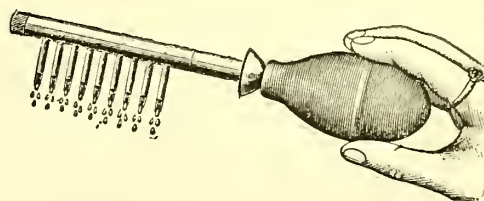
STANDARD POWDERS.—Messrs. Southall Bros. & Barclay, Ltd., Lower Priory, Birmingham, some few weeks ago called attention in our advertising-columns to a series of standard powders for analysts which they are now supplying. We have recently had an opportunity of examining one of the collections. The box we have before us contains a collection of 100 different powders, each being in a half-ounce sample bottle. We have spent a pleasant evening examining some of the powders under the microscope, and with the aid of Greenish & Collin's "Anatomical Atlas of Vegetable Powders" have been able to trace with little difficulty the characteristics of the specimens. The collection should be of considerable value to pharmacists, as we are sure that Messrs. Southall have taken pains to supply genuine samples upon which the utmost reliance can be placed. To give an idea of what powders are comprised in the collection we may note that there are 15 starches, 7 leaves, 24 roots, 7 barks, 32 seeds and fruits, with other samples falling under the heading "Miscellaneous." There are samples of powder: Rio and Cartagena ipecacuanha; English and foreign rhubarb; Jamaica, African, and Cochin ginger; cloves, mother cloves, and clove stems; while in the case of oil-seeds these occur in the collection oil-free. A smaller collection has been arranged specially for pharmacists' use, such things as coffee and cocoa being omitted. This No. 2 collection costs 20s. the No. 1 being priced at 30s.

"VULNOPLAST" is a new form of bandage-plaster which Messrs. A. W. Nicholls & Sons, 85 Broadwall, Stamford Street, S.E., are introducing to the trade. The illustration gives an idea of what "Vulnoplast" is like. There is first a layer of perforated medicated plaster, upon this is cotton-wool, the outer covering being an adhesive layer. The advantage of absorbability which "Vulnoplast" offers will



be at once apparent, as well as the utility of the dressing as a first-aid application to cuts, wounds, and burns. "Vulnoplast" is supplied for surgeons' use in 1, 3, and 5 yard packages in widths of 1½, 2½, and 3½ inches and variously medicated. It is intended to put up 7½d. packets for retail sale, as in this case "Vulnoplast" needs an Inland Revenue stamp.

A "HAIR-GROWING" COMB.—The Dr. Vaux Co., 80A Southwark Street, S.E., have recently put on the market an ingenious fountain comb for spraying dandruff-removers and hair-restorers directly on the scalp. It consists of a hollow metal tube with seven hollow teeth projecting at



right-angles from one end of the tube. The tube unscrews half-way, and to the other end is affixed an indiarubber bulb like those used in syringes. Before using, the bulb end is unscrewed and the lotion or scalp-application is sucked up in the usual way; the filled bulb is screwed back on the "comb" portion, and the "scalp-sprayer," as it is called, is ready for use. The spraying and combing are, of course, done simultaneously, a slight pressure on the bulb forcing the liquid through the teeth to the scalp. The "scalp-sprayer" is retailed at 4s., and the sale to the public is to be mainly through chemists.

South African News.

(From our own Correspondents.)

Note.—"The Chemist and Druggist" is regularly supplied by order to all the members of all the Pharmaceutical Societies in British South Africa, viz.:

South African Pharmaceutical Association.
Pharmaceutical Society of Cape Colony.
Natal Pharmaceutical Society.
Transvaal Pharmaceutical Society.
Rhodesia Pharmaceutical Society.
Northern District Chemists' Association.
Pharmaceutical Society of Orange River Colony.

Cape Colony.

ALLEGED DEATH BY POISONING.—The adjourned inquest (see *C. & D.*, July 1, p. 33) at Port Elizabeth on the body of a child who died on May 23 was concluded on July 12. The verdict was that death was due to convulsions produced by the presence of strychnine in some medicine made up by an assistant, Mr. Charles Richards, in the employ of Messrs. J. A. Willet & Co. Mr. Richards has been arrested and bail refused.

PROSECUTED FOR PRESCRIBING.—A singular case was heard at George, Cape Colony, when Mr. James Henry Morris, a chemist and druggist, was charged with a breach of the Medical Act. It appeared that a farmer named Klaas Appels, of Langevele, brought into town his wife, who had been blind about a month. The blindness was partly due to neuralgia. Dr. St. Leger and Dr. Snow both examined the woman separately and afterwards in consultation. They advised an operation, and that she should go to the Oudtsloorn Hospital. This Mrs. Appels refused to do, and the pair then went to the defendant's shop. Mr. Morris said he could only give her something for pains in the head. Returning from the chemist's shop, Dr. Snow met the pair, and asked for the bottle of medicine, which they had bought for 1s. 6d. Mr. Borchers argued if he went to a chemist's and asked for something for pain in the head he might mix the medicine; but the Magistrate, Mr. Haw, held to the contrary, and committed the defendant for trial, allowing light bail.

FATAL PIGEON-PILLS.—A pigeon-fancier, named Van Reenan, sued Messrs. A. Cleghorn & Darroll, chemists, Cape Town, on July 13, for 2*l.* 10*s.*, purporting to be the value of five pigeons which died after taking medicine prescribed by the Cape Government Veterinary Surgeon and the Government Bacteriologist conjointly. It was not clear what prompted the plaintiff to take action against the chemist filling the prescription; but, as he was represented by a legal adviser, it can only be assumed that he was very ill advised. The plaintiff had the balance of the pills that remained analysed by the Government Analyst, but even this did not deter him taking the case into court. Evidence was given at great length, the time of the Court being taken up from midday till close on five o'clock in the afternoon, when the Government Bacteriologist was called to give expert evidence. Towards the close he said that he understood that the prescription issued by Dr. Hutchinson and himself conjointly had been properly filled. His information was from the Government laboratory, which prompted the Magistrate to comment very severely on the case, and asked the legal adviser of the plaintiff what he brought it into court at all for, seeing that he had no case. One of the assistant Government analysts explained that he would not like to try to make pills more exact. They were supposed to contain sulphate of copper gr. 1, and santonin gr. $\frac{1}{2}$. The majority of them were correct, while the highest percentage of sulphate of copper was gr. $1\frac{1}{5}$ in any one pill. All through it was not clear what so much expert evidence was wanted for. Two analytical chemists were engaged in the case, as well as the Government veterinary adviser, and the Government Bacteriologist. The decision of the Court was for the defendants, with all costs, the Magistrate remarking that there was little doubt but that the medicine killed the pigeons, but that had nothing to do with the firm of chemists filling the prescription.

Natal

THE EARLY-CLOSING BILL.—This Bill has been receiving a great amount of attention in the Legislative Assembly. Mr.

McLarty, the junior member for Durban, and the Chairman of the Select Committee on the Bill, in moving the adoption of the Committee's Report, said that thirty-eight witnesses from all parts of the Colony had been examined by the Committee, and that the evidence taken was of a thoroughly representative character, even to the inclusion of the evidence of Arab storekeepers. He moved that the Government be requested to withdraw the present Bill and introduce during the present session of Parliament a new Bill based on the recommendations contained in the Committee's report. Mr. Churchill, member for Durban County, moved as an amendment:

That sub-section (a) of Section 4 of the Committee's report be not embodied in any new Bill, but that this House recommends the following sub-section be considered in place thereof: That all shops be closed on Monday, Tuesday, Wednesday, and Thursday in each week, not later than half-past five in the afternoon, with half an hour's grace for the purpose of serving customers who may be in the shop at the hour of closing. On Friday shops may be open till ten o'clock at night. On Saturday all shops be closed at two o'clock in the afternoon, and all manner of business shall cease till Monday morning.

This was eventually carried and will be incorporated in the draft Bill which is presently to come up for discussion. It is expected that the hours for chemists will be in accordance with the resolution passed at the meeting of chemists in Durban a short time ago (see *C. & D.*, July 8, p. 74).

Orange River Colony.

MEDICAL ACT CASES.—At the Bloemfontein High Court on July 12, the case of the King v. Booï van Rooyen was heard. The accused was charged before the R.M. of Kroonstad with a contravention of Section 22 of Ordinance No. 1 of 1904 (the Medical and Pharmacy Ordinance), in that he unlawfully practised as a doctor. At the close of the preliminary examination accused admitted his guilt, and the Attorney-General remitted the case back to the R.M. to deal with it. The Magistrate, finding the accused guilty, imposed a sentence of 50*l.* or twelve months' imprisonment with hard labour. When the case came up for review, the Judge of the week referred it to the Attorney-General as to the propriety of remitting it to the R.M. The Attorney-General stated in reply that this had been done in inadvertence. All the proceedings which have occurred since the remittal and the remittal itself will accordingly be set aside.—At the same court another case came up for review. The accused, Thos. G. Lamey, was charged before the A.R.M. at Jagersfontein with contravening Section 22 of Ordinance No. 1 of 1904 by practising as a medical practitioner without the necessary certificate. The Magistrate acquitted the accused on the ground that the charge was defective, and secondly he was not satisfied from the evidence that what the accused had been proved to have done amounted to practising as a medical practitioner. Mr. Justice Ward, in giving judgment, said "that although the remedy applied by the accused in the cases before us was merely rubbing, there is nothing to differentiate his conduct from that of any other medical practitioner, and we think, if the charge had been properly framed, he should have been convicted of having practised as a medical practitioner."

Transvaal.

"VIABI" TREATMENT.—On July 5 at Pretoria, Miss Laura Mary Green, local manageress of the Viavi Treatment Co., who is charged with contravening the Medical and Pharmacy Act by practising and selling without a licence, was committed for trial at the Criminal Sessions, bail being allowed. The facts of the case were reported in the *C. & D.*, July 29, p. 155.—At the Johannesburg Court on July 7, Mr. William Thomas Anderson, South African manager of the Viavi Co., was again charged with a like offence. Among the evidence tendered was that of Mr. A. Heymann, pharmaceutical chemist to Messrs. Eckstein, who said he had analysed half a bottle of Viavi Royal submitted to him for that purpose. He found Viavi Royal to be a medicated spirit containing 11.74 per cent. of alcohol by weight or 14.64 per cent. by volume. A further analysis showed that the preparation contained sugar, traces of phosphoric acid, etc., and a minute quantity of strychnine. The accused was discharged.

First Transvaal Pharmacy Board.



The names are (from left to right) Mr. J. R. Jones (Pretoria), Mr. W. T. Skiun (Johannesburg), Mr. W. A. J. Cameron (Secretary), Mr. J. H. Dinwoodie (President), Mr. R. Butters (Johannesburg), Mr. B. Owen Jones (Boksburg), and Dr. J. van Niekerk.

India and the East.

(News from our own Correspondents.)

CAPTAIN J. W. CORNWALL, I.M.S., is to be the first superintendent of the Pasteur Institute at Coonoor.

MR. ALEXANDER WILSON, representing Messrs. Evans Sons Lescher & Webb, Ltd., was in Bombay when the mail left on July 15.

POISONING IN THE PUNJAB.—Arsenic was the favourite poison in 56 per cent. of the 395 cases that were sent up for examination to the Chemical Examiner for 1904. Opium came next on the list, being used in 23 per cent. of cases.

A NEW ASSOCIATION.—At a meeting of Penang chemists held on June 29, it was resolved to form a Penang branch of the Straits Settlements Pharmaceutical Association, the headquarters being at Singapore. Mr. C. Trim Johnson, pharmaceutical chemist, was appointed Secretary of the Penang Branch.

MADRAS MUNICIPAL LABORATORY.—The Government of Madras have requested the Corporation to make special arrangements for the construction of a separate municipal laboratory for conducting the analysis of foods and drugs under the City Municipal Act.

INDIAN BALSAMS.—A systematic catalogue of the various balsams of India is issued in the current record of the "Botanical Survey of India," by Sir J. D. Hooker, F.R.S. These balsams have been but little studied, Sir J. D. Hooker holding that while he is able to enumerate 116 species many more exist.

JAPANESE MEDICINE-TAX.—By this week's mail we have learnt that the Japanese import duty referred to by Mr. Ernest O. James in his article in our Summer Issue, was enforced in the last week of June. The duty is placed upon all imported medicines which are held out for the relief or

cure of any human ailment, and is to be denoted by stamps at the rate of 10 per cent. of the prices at which the articles are retailed.

A GENTLE HINT.—It is hoped, writes a Penang correspondent, that manufacturers and owners of proprietaries when shipping to the Straits Settlements will help the local chemists to conform to the new Poisons Ordinance by labelling any articles on the outside of the wrapper "Poison" when such articles come within the scope of the Ordinance. The list of poisons was printed in the *C. & D.*, May 13, p. 753, and contains in addition:

- Arsenic and all preparations of arsenic.
- Carbolic acid.
- Hydrocyanic acid and all cyanides.
- Chloroform.
- Cantharides and its preparations.
- Ergot of rye and its preparations.

THE AYAH PRESCRIBES.—An extraordinary case of mercurial poisoning in Colombo was reported recently. A lady doctor's ayah noticed her mistress giving santonin to her children. She heard from her friends who kept a *boutique* in the neighbourhood that a child was unwell. She was told what the symptoms were, and she traced a resemblance in these to the case of the children at home, and told the mother of the child that she knew what remedy her lady was in the habit of giving to her children in similar circumstances. She went home and brought them a quantity of what she thought was santonin, directing how it was to be taken. One dose of this was given to the child, who soon fell into a fit. It was found that the ayah had given corrosive sublimate in place of santonin, and the child died. At the inquest the Coroner commented on the want of precaution in not keeping poisons beyond the reach of everyone, and also on the fact that the phial bore no distinguishing label to indicate that it contained poison.



TO CORRESPONDENTS.—Please write clearly and concisely on one side of the paper only. All communications should be accompanied by the names and addresses of the writers. If queries are submitted, each should be written on a separate piece of paper. We do not reply to queries by post, and can only answer on subjects of general interest.

The Pharmaceutical Student's Education.

SIR,—During the past few years I have carefully watched and studied the various suggestions put forward with regard to the above. Undoubtedly it is a very knotty point to deal with. I give my views without considering whether the Pharmaceutical Society of Great Britain can or cannot legally change their present system of examinations. I simply wish to submit them for discussion.

In formulating my scheme I may at once say that I have gone upon the basis of "an ounce of practice being worth pounds of theory," and would suggest that the proper education of the pharmaceutical student consists in his receiving a maximum of practical training and a minimum of theoretical.

Each candidate for registration as a chemist and druggist should be required to produce (1) the usual certificate as to the three-years' practical experience, and (2) certificates that he has passed the two examinations, called the "First" and the "Second" respectively.

FIRST EXAMINATION. (Fee, 2l. 3s.)

Division I.

(a) *Metrical and British Systems of Weights and Measures.* Course of ten lectures, including practical training. Examination written, and lasting one hour.

(b) *Bookkeeping*, mainly that necessary for the conduct of an ordinary chemist's business. Course of twenty lectures, including practical training. Examination written, and lasting two hours.

(c) *Pharmaceutical Latin.*—Course of ten lectures. Examination written, and lasting one hour.

Division II.

(d) *Botany.*—Elementary stage of Science and Art Department. No dried plants to be recognised. Lectures, twenty to twenty-five. Excursions and practical work, forty to fifty hours. Examinations—written (two hours), practical (two hours), oral (fifteen to thirty minutes).

(e) *Elementary Natural Philosophy*, especially that relating to chemistry.—Lectures, practical work, and examinations as in (d).

The present Preliminary examination I have consigned to oblivion. What is the use of all the advance in our educational system if we are to pass it by, saying, "We cannot trust it—we must see that the brains of our apprentices are crammed full of as much theory as possible—pour in theory of Latin, theory of English, theory of French, theory of mathematics." And, after all, what is the result? Why, the poor white-faced apprentice will tell you when the battle of Bannockburn was fought; how, when, and where Rizzio was murdered; and a host of other items equally useless, and yet he knows not why he eats butter with his bread, or how the flowers by the wayside live and have their being. Theory is the bane of our earlier training, driving out any originality that we might luckily possess. There is no use of "putting the cart before the horse"—what we want is a race of sound practical-theoretical druggists, not theoretical-practical ones.

The "First" examination just detailed could easily be passed during the candidate's apprenticeship, and immediately he has finished his term of service he ought to commence studying for the

SECOND EXAMINATION. (Fee, 7l. 7s.)

Division I.

(a) *Chemistry.*—Extent of subject, much as at present required for the Minor. Examinations—written (three hours), practical (four hours), oral (fifteen to thirty minutes).

Division II.

(b) *Materia Medica.*—(1) *Materia medica* proper. (2) Pharmacy: Practical pharmacy, dispensing, and prescription-

reading. Extent of subject and examinations on the same principle as in (a).

(c) *Poison Schedule, etc.*—As in the Minor. Examination written, one hour.

Candidates should be allowed to take the divisions of either examination separately or together, provided that the "First" be passed before the "Second," and the first division of each examination before the second division. A value such as the following should be placed upon the examinations:

First Exam.—Division I., 100 marks; Division II., 100 marks.

Second Exam.—Division I., 100 marks; Division II., 200 marks.

Candidates who gain from 80 to 100 per cent. of the marks at the "First" and "Second" exams, should receive a Highest Honours diploma; and those who gain 60 to 80 per cent., a Distinction diploma. If any candidate be found to have passed in one or more subjects with sufficient merit, he should not be liable to re-examination in such subject or subjects, provided he passes the first division of either exam. before he can claim exemption from any subject in the second division.

A student should be allowed to try his "Second" examination whenever he chooses. He ought not to be bound down by "red tape" as regards his age. A candidate aged nineteen years is equally as good as—if not better than—one who is twenty-one. At the Scottish universities medical students—although not allowed to graduate until they reach the age of twenty-one years—are allowed to pass their final examination at any age. Sauce for the goose should be sauce for the gander. To register as a pharmaceutical chemist it would be necessary for the candidate to undergo a recognised curriculum, and pass the "Third" examination or take a degree (such as Bachelor of Pharmacy) at a university. I trust your readers will enter into a discussion upon this important subject.

Yours faithfully,

JOHN WISHART.

Tu Quoque.

SIR,—We read with much interest a letter by Mr. J. E. Eastman, "A Danger that may Threaten any Chemist" (*vide the C. & D.*, July 22). Might we suggest that this slovenly as well as dangerous practice is far too common among chemists themselves? We have frequently had bottles brought back to us with other chemists' labels pasted on top of our own. We enclose a bottle handed to us today. Comment is needless. We feel strongly that chemists should put their own houses in order, and not be continually girding at stores, oilmen, etc.

Yours faithfully,

W. F. POWELL & Co.

[The bottle enclosed by our correspondent is a plain 1-oz. lipped bottle with a "Camphorated oil" label stuck on top of a "Best olive oil" label.—*Ed. C. & D.*]

Unprofitable Patents.

SIR,—I have read the interesting letter from "Awake" in last week's *C. & D.*, and would like to ask him one or two questions. Does he not find his refusing to stock certain patents drive his customers to his competitors? My experience is, your Eno's customer asks for what he particularly fancies, or is forced to believe, through newspaper ads., is best; and no matter what you sell him, he is not satisfied: Eno's he wanted and will have, and, ten chances to one, should he require a prescription dispensed he will not favour you but where he got his patent. Does "Awake" think it good business to turn this unprofitable (?) customer away? I think not. Even should you succeed in selling him one of "our own," it does not meet his notion. A case in point: Some time since I wanted to purchase a gramophone. Calling on a highly respectable music-seller, I was asked, "Have you heard one of our own make?" I replied, "No! and don't wish to," walking out of the shop. And in all probability one half "Awake's" forced-sales customers, though they may purchase, will have similar feelings to myself as instanced. For some years I have adopted the opposite plan to "Awake's," stocking every possible patent having any sale at all, whether profitable or on the P.A.T.A. or not, at the same time keeping my own articles well to the front—windows, counter, bills, posters, etc.—thus building up a big sale for each, especially one (formula from our old friend the *C. & D.*), while my general retail turnover has increased from 40l. to 200l. per week,

and not in six establishments, but one, and I never regret the day I did not kick out the patents that do or do not pay.

Sincerely yours.

ALERT. (33/10.)

Legal Queries.

Before submitting queries in this department, subscribers are advised to consult the "C. & D. Diary," 1905, on General and Trade laws, p. 287; Pharmacy and Poison laws, p. 299, and Medicine-stamp Acts, p. 279. In respect to the last we can mark labels "Liable" or "Not liable" if they are sent in duplicate, and with a stamped and addressed envelope for return of the marked ones.

Full particulars in regard to trade-mark registration will be found in the "Diary," p. 240.

F. W. (22/46).—The question as to whether the three months' or six months' notice for the termination of the tenancy is right must be a matter of evidence, seeing that each occurs in agreements. Six months is the usual term, and we gather from what you say that the agreement which you signed and gave to the landlord is for that period. It is impossible to give a definite legal opinion on a matter like this without all the documents being before us.

J. T. B. (23/16).—The purchase which you describe was quite regular, and provided no appreciable interval elapsed between the purchase by the labouring man and division of the sample by the detective little can be based on the incident.

Pendennis (25/44).—The evidence of yourself and your witness might suffice to satisfy a court that the medical attendance upon you was gratis, if you can explain why he entered the charges in his books. Until the contrary is proved the charges are legal, and you have to pay them.

Lex (25/53).—There is no such law as that to which you refer. Property which becomes ownerless reverts to the Crown.

Miscellaneous Inquiries.

We endeavour to reply promptly and practically to trade questions of general interest, but cannot guarantee insertion of replies on a particular date, nor can we repeat information given during the past twelve months.

Equine (17/51) wants to know how to stop a horse shaking his head. He thinks it is caused by the ears becoming wet through perspiration, but our veterinary expert says this may be a purely nervous condition, and, if so, no treatment would be useful; but the trouble is more likely to be caused by a badly-fitting bridle irritating the base of the ears when these are wet from either perspiration or rain. See that the bridle fits properly, and apply an astringent lotion, such as lead acetate or alum, and dress with borie acid tinted to suit the colour of the animal.

One of Them (22/72).—If you had put your arguments in more business-like form, leaving out the personal element, your letter would have found a place.

Baron (21/54).—The Berkefeld and Chamberland water-filters are efficient sterilizers, and there is little chance of bacteria growing in them if the filtering-candles are regularly brushed.

Sc. Ph.—(9/1).—*TR. QUININE AMMON.*—The gelatinous precipitation is exceptional. Are you sure your spirit was of full strength?

C. L. H. (59/29).—We have seen nitrous fumes arise from bismuth subnitrate when long kept, and assumed that it was due to absorption of other acids from the air. Under certain conditions carbonic acid would replace the nitric radicle.

Information Wanted.

Inquiries for the names and addresses of manufacturers, or other trade information, not traceable by reference to the advertisement-pages of "The Chemist and Druggist" and the "C. & D. Diary," or not filed in our private register, are inserted here free of charge. Postcard or other replies to any of the subjoined inquiries (addressed to the Editor "The Chemist and Druggist," 42 Cannon Street, London, E.C.), will be esteemed.

32/5. Names of actual makers of covered pots.

33/30. Where can "Hashra" tea be obtained?

30/44. Where can Setterie's pile-cones be obtained?

3/8. What is "Vucol," and where can it be obtained?

35/1. Who are the makers or agents for Soxhlet's sugar of milk?

Trade Report.

NOTICE TO BUYERS.—The prices given in this section are those obtained by importers or manufacturers for bulk quantities or original packages. To these prices various charges have to be added, whereby values are in many instances greatly augmented before wholesale dealers stock the goods. Qualities of drugs and oils vary greatly, and higher prices are commanded by selected qualities even in bulk quantities. It would be unreasonable for retail buyers to expect to get small quantities at anything like the prices here quoted.

42 Cannon Street, London, E.C., August 10.

LITTLE of interest has transpired in drugs and chemicals this week, and changes are fewer than usual, owing to the markets having been under the influence of holidays. Among drugs, higher prices are now asked for cannabis indica and areca. Ergot is tending higher, with a fair demand; and opium, although quieter this week, is very firm: prices on the spot during the past fortnight have advanced 3d. to 4d. per lb. Tragacanth is firmer in some quarters, scammony-root is lower, and Persian galls are quiet. In chemicals, quicksilver is weak. Quinine is unaltered and without business. Carbolic acid is a shade easier for refined, but benzols are firmer. Antimony regulus is again dearer for English. English refined camphor is easier. Among essential oils, star aniseed has advanced 3d. within the fortnight, and cassia is firm with more inquiry. Japanese peppermint is firm, but no business has transpired. American oil is weak—in sympathy with Western advices. Clove oil is firm. Movements among fixed oils include an upward tendency for castor. Linseed oil is lower, and cocoanut and crude cotton-seed tend easier. Turpentine has advanced 6d. since the holidays, and petroleum is unchanged. Cod-liver oil is firm, but quiet. The following are the chief alterations for the week:

Higher	Firmer	Easier	Lower
Areca	Benzols	Acid, carbolic	Oil, linsced
Cannabis	Chamomiles	Camphor(ref.)	Scammony-
indica	Oil, aniseed,	Oil, cocoanut	root
Opium	star	Quicksilver	
Turpentine	Tragacanth	(see. hands)	
		Soy	

Cablegrams.

HAMBURG, August 10:—Ergot is firmer at 315m. per 100 kilos. Lycopodium for forward delivery is lower, and carnauba wax is quiet.

SMYRNA, August 4.—The sales of opium for the week ended Thursday amount to 100 cases, for account of the United States and native speculators. Market closes steady.

SMYRNA, August 8.—The sales of opium, including the above 100 cases, now amount to 450 cases in all, for the week ended Saturday. The United States has been the chief buyer, and the market is hardening. It would therefore appear advisable to buy.

Seven Months' Foreign Trade.

The Board of Trade Returns for July again show remarkable evidence of the vitality of our foreign trade, substantial increases being shown in both imports and exports, the figures being as follows:

	May, 1905.	Increase.
	£	£
Imports	44,741,838	3,785,237
Exports	27,821,051	3,037,469

The totals for the first seven months of the year are also excellent, the increases over the same period of 1904 being:

	1905.	Increase.
	£	£
Imports	317,847,399	4,954,008
Exports	183,527,272	14,627,023

The increase in exports for the seven months is mostly in

manufactured articles, which are 13,520,000 $\frac{1}{2}$ up, and in this schedule "chemicals, drugs, dyes, and colours" show a gain of 403,082 $\frac{1}{2}$, the total now being 8,251,000 $\frac{1}{2}$. Our exports of medicines are quite satisfactory, the total for the seven months having risen to 842,333 $\frac{1}{2}$, or 81,372 $\frac{1}{2}$ more. Every item among the soda compounds, with the exception of saltcake, shows an expansion, and among bleaching materials the gain is 53,800 cwt. on the seven months, the United States having been a larger purchaser. Among the items showing a shrinkage are sulphate of copper, cream of tartar, glycerin, and sulphuric acid; and in miscellaneous articles quicksilver improved by 76,070 lbs. to 994,525 lbs., the shellac exports amounting to 58,644 cwt., or 22,000 cwt. more. Quinine and quinine salts of British make are returned at 426,528 oz., against 390,213 oz. for the seven months of 1904; but of quinine declared to be of foreign make the exports only amount to 59,077 oz. for the seven months, against 105,798 oz. for the seven months of 1904.

Japanese Peppermint Oil.

The following letter from Messrs. Suzuki & Co., of Kobe, dated June 8, appears in the current issue of the "Oil, Paint, and Drug Reporter": "You are perhaps aware that the chief districts in which peppermint is produced are the provinces of Bizen, Bitchiu, and Bingo, all in Kwansai districts, the productions of the three provinces amounting to half the total quantity produced in the whole country. Next in order come the North-eastern provinces of Uzen and Ugo, which have historically been known as the producing districts of peppermint. Then comes Hokkaido, where, on account of the undeveloped character of the country, the peppermint-industry is being encouraged as profitable, in contrast to other localities where it is declared as unprofitable, and there is every indication of yearly increase in plantation. Lastly come the provinces of Awa and Tosa on the Shikoku Island, Buzen and Bungo in Kiushiu, and Kawaichi, in all of which it is expected there will be an increased production as compared with last year. Of the above, the province of Awa has long been known as the producing district of indigo plant, which on account of the gradual increase in the importation of foreign indigo, as well as of artificial indigo, has almost been demoralised, the industry becoming more and more unprofitable, prices obtained being below costs. Attention was therefore directed a year ago to the culture of peppermint, the cultivation of which is somewhat similar to that of the indigo plant, and, as a result of zealous attention exerted, it is expected that a satisfactory result will this year be obtained. Calculating from the area planted in the various districts this year's crop is estimated to be as follows:

	Piculs.
Provinces of Bizen, Bitchiu, and Bingo ...	2,500
Hokkaido ...	600
North-eastern provinces of Uzen and Ugo ...	600
Shikoku, Kiushiu, Kawachi, and Harima ...	500
Total piculs. ...	4,200

The above is, of course, subject to some change, according to the climatic conditions that will prevail during the remainder of the season, though we do not expect there will be any material alterations."

Bulgarian Otto-of-rose Market.

Our correspondent in Bulgaria, under date August 2, writes as follows: "As reported in my last letter, this year's rose market opened very early and very firmly. On July 10 the new price of this season was fixed at Golemo Selo, the largest village of the county of Kazanlik, at the rate of 17s. per Turkish ounce for all pure ottos of 15° R., and 18s. 3d. for all ottos of 16° R. A week later the price was fixed at Rahmanli, the largest village in the county of Brezovo, at an increase of 1s. per oz., viz., 18s. per T. oz. for all ottos of 15° R., and 19s. 3d. per T. oz. for all pure ottos of 16° R. This price has been firmly maintained all through the last fortnight, and on this basis all the villages of the county of Brezovo and a dozen of the villages in the county of Karlovo have been bought. Only in exceptional cases here and there an addition of 6d. per oz. has been paid for extra fine lots. So far fully 50,000 T. oz. of the new crop have been bought up at the price fixed at Rahmanli, there remaining as yet for sale 60,000 oz. of the new crop and some 30,000 oz. old stock, left over from last year's crop. All the remaining villages hold back their produce for higher prices. On account of the expensive fuel this year, nearly all the growers ask at least an advance of 2s. 6d. per oz. As all pure ottos are much sought after, the price of 18s. 6d. and 19s. 9d. will surely be realised by the end of the year. This can hardly be said for the poor and sophisticated grades, and of those there are plenty this year. There is at present a determined effort on the part of exporters to check the spread of sophistication, and to pay a good price for pure ottos—hence the present rise in the price of pure otto."

ACID, CARBOLIC.—Both crude and crystals are fractionally easier; 39° to 40° C. crystals are quoted 6d. to 6 $\frac{1}{2}$ d., and 34° to 35° C., 6d. per lb.; 50 per cent. *crude* is 1s. 5d.; 60 per cent. 1s. 8 $\frac{1}{2}$ d. to 1s. 9d., and 75 per cent. 2s. 2d. per gallon.

ALBUMEN is very scarce on the spot; good quality is worth from 1s. 11d. to 1s. 11 $\frac{1}{2}$ d. per lb., according to seller.

ANTIMONY.—One holder of English regulus has advanced his price from 60 $\frac{1}{2}$ to 65 $\frac{1}{2}$ per ton, but there are still sellers at 63 $\frac{1}{2}$.

ARECA.—Spot supplies are extremely small, 17s. per cwt. being asked.

CAMPHOR.—English refined is rather weaker, and although refiners ask 3s. nominally, 2s. 10d. would readily be accepted in some quarters. Japanese in tablets is obtainable at last week's auction prices—viz., 2s. 6d. per lb. for 1-oz. tablets, and further business has been done at this figure.

CANNABIS INDICA.—The principal importer has advanced his price to 4s. to 4s. 9d. per lb. for tops, and 3s. 9d. to 4s. for siftings, as to quality, and nothing is now obtainable under these prices.

CHAMOMILES.—It is reported that the rains have somewhat damaged the Belgian crop, and that prices in consequence are higher. Good quality is extremely scarce, and flowers that were selling last week at from 67s. to 75s. are worth fully 3s. more to-day.

CINCHONA.—The stock in first hands at Amsterdam on August 3 consisted of 4,291 packages of Government bark and 15,321 packages of private bark, including the quantity to be offered at auction on August 24.

COCCULUS INDICUS is a scarce article at from 8s. to 8s. 6d. per cwt.

COCHINEAL.—The exports of cochineal from the Canary Islands during 1904 amounted to 38 tons, of which France received 33 $\frac{1}{2}$ tons and the United Kingdom 4 $\frac{3}{4}$ tons.

ERGOT.—Firm and in fair demand. Russian of the old crop is offered from Hamburg at 1s. 5 $\frac{1}{2}$ d. per lb., c.i.f., and for old Spanish on the spot 1s. 7 $\frac{1}{2}$ d. has been paid. It is reported that stocks in Spain are now extremely low and that only limited quantities are offered, Hamburg having been a large buyer. Of Russian, too, small lots only are offered by Hamburg dealers, while on the spot stocks are extremely small.

GALLS.—Persian are quiet, blue offering at from 70s. to 75s. per cwt. Stocks, however, are small.

GAMBER.—The price of cubcs is 28s. 6d. per ewt., at which sales have been made.

GERMAN HERBS.—Reports to hand from the producing centres in Germany indicate that much less importance is now attached to the collection of German medicinal herbs on the part of peasants who formerly worked for a mere pittance. This is greatly owing to the opening-up of new tourist districts and the erection of hotels, hydros, etc., which fact tends to give more remunerative employment to those who hitherto depended on the precarious livelihood of collecting herbs. This, of course, is unsatisfactory to dealers, as naturally there is a difficulty in getting regular supplies from the usual sources.

HONEY.—Italian of the new crop for August-September shipment in cases is quoted 37s. 6d. to 38s. per cwt., c.i.f. London, according to packing.

LYCOPodium is quoted on the spot at from 3s. 3d. to 3s. 4d. per lb., but for August delivery prices are lower.

MASTICH.—The market continues bare of supplies, price of pale tear being about 1s. 6d. per lb.

MENTHOL.—Speculative interest has subsided in this article and no business of importance has been done. The market, however, is steady at the closing prices of last week—viz., 8s. 6d. per lb. spot for Kobayashi.

MORPHINE is very firm in sympathy with the advance in opium, but no alteration has yet taken place in makers' prices. An advance, however, would not be surprising. The same remarks apply to *codeine* and salts.

OIL, ANISEED, STAR, is firm and in more demand, prices having advanced from 2d. to 3d. within the fortnight: 4s. 8d. to 4s. 9d. per lb. spot is now the lowest.

OIL, CASSIA, is firm at 3s. 1d. per lb. for oil containing 80 to 85 per cent. cinnamic aldehyde, at which business has been done.

OIL, CASTOR.—The market for Italian tends upward, cold-drawn medicinal oil being quoted 35s. per cwt., c.i.f. London, in cases.

OIL, CITRONELLA, is quoted at 1s. 8d. per lb. on the spot for Ceylon.

OIL, COD-LIVER.—Private advices from Norway report a steadily improving market there, with a fair amount of business in progress. Here, however, there is little doing at the moment, values being firm at from about 85s. to 90s. per barrel for finest Lofoten oil. Our Bergen correspondent writes on August 7 that the oil-market is still very strong with an advancing tendency. Unrefined oil has been in request, and for a parcel of finest non-congealing Lofoten oil the equivalent of 82s. per barrel, f.o.b. Bergen, has been refused. The exports from Bergen amount to 6,730 barrels against 4,180 barrels at the corresponding date of last year.

Messrs. J. Thesen & Co., of Bergen, have issued a circular, of which the following is an abstract: "Reports continue to state more and more that in view of the large production of steam-refined oil the supplies of amber-coloured, pale, and light-brown oils will only be very small this year—much smaller than was expected. This scarcity of oil has already made itself felt for some time. The few casks which have arrived are being bought up quickly by eager buyers at increased prices, as it is believed that the production will be inadequate for the season's demands. Consequently it is feared that prices will be still higher for the autumn and winter. With regard to medicinal steam-refined oil, the greater part has already been sold and exported. Its consumption has increased enormously this season, and the oil has been exceedingly cheap this year. In view of the diminishing stocks the market is firmer, with a continued rising tendency."

OIL, LEMONGRASS.—A small business has been done at 8½d. per oz. on the spot.

OIL, PEPPERMINT.—Resales of the parcel of American H.G.H. sold in auction last week, have since been made at 12s. 7½d. to 13s. per lb., but nothing is obtainable below 13s., usual London terms. Offers of the new crop of Wayne County oil for October delivery are being made at 10s., c.i.f. Japanese dementolised is quiet but firm at 4s. 6d. spot for Kobayashi, with buyers at 4s. 3d.

OILS, FIXED.—American *Turpentine* on the spot has advanced to 45s. 3d. per cwt., at which price the market is quiet. *Cocoonut* is easier at 29s. per cwt. for Ceylon, and 34s. for Cochin, on the spot. *Linseed* is lower at 17s. 6d. for London pipes on the spot, and 17s. 10½d. for barrels. *Rape* is dull of sale at 21s. 6d. for ordinary brown on the spot, and 22s. 3d. for British refined. *Ravison* naked, on the spot, remains at 19s., and forward 18s. 6d. per cwt. *Cottonseed* is rather lower at 16s. 6d. for crude, and at from 17s. 6d. to 19s. 6d. for refined. *Lagos Palm* is still 26s. on the spot, and *Petroleum* oil is weak at 5½d. per gal. for Roumanian, 5½d. to 5½d. for Russian, 5½d. to 5½d. for American, and 7½d. for water white.

OPIMUM.—During the past fortnight a good business has been done at rising price, in sympathy with Smyrna and Constantinople markets. Good to fine Smyrna druggists' is now quoted 9s. to 9s. 6d. per lb., and for good to fine soft-shipping, from 10s. 6d. to 12s. 6d. per lb. is asked. Some forty to fifty cases of all descriptions have changed hands during the past week. Persian is in good inquiry, and 25s. per lb. has been paid for small lots.

SMYRNA, July 21.—The sales for the week amount to 69 cases, including 33 cases of selected usual run tale quale for the United States, and 36 cases common current and usual run tale quale for speculators. Quotations are as follows: Current t.q. 8s. 1d. to 8s. 6d., selected t.q. 8s. 5d. to 8s. 8d., Karahissar usual run 8s. 9d. to 8s. 10½d., selected ditto 8s. 11d. to 9s., extra selected ditto 9s. to 9s. 2d., Yerli as to quality and conditions 8s. 6d. to 10s., Bogaditz 8s. 9d. to 9s. 8d. per lb. f.o.b. Market continues firm and well maintained. Very hot weather is reported in the interior. The arrivals in Smyrna amount to 239 cases, against 1,299 cases at the same time last year.

SMYRNA, July 22.—The transactions during the past week amount to 20 cases of current Karahissar t.q. at the equivalent of 8s. 8d. per lb. c.i.f., and 49 cases Karahissar t.q. at 8s. 11d. c.i.f., of which 36 were for local speculators. The market closes very firm with buyers, and the arrivals in Smyrna amount to 239 cases, against 1,299 cases at the same time last year.

SMYRNA, July 28.—The sales this week amount only to 4 cases fine selected Karahissar, extra quality, for the Continent at 9s. 3d. per lb. f.o.b. Notwithstanding the quiet market, sellers are very firm, and will advance prices as soon as buyers and speculators come forward. The arrivals in

Smyrna to date amount to 311 cases, against 1,745 cases at same period last year.

A monthly report dated Smyrna, July 31, states: "The sales during July amount to 257 cases, as follows: 72 on speculation, 94 for America, 80 for England, and 11 for the Continent. The last report gave the official estimate of the crop at 4,000 cases. Since then, however, rains and hot southerly winds further reduced the yield, which to-day stands at 2,200 cases Smyrna and Constantinople and 400 cases Salonica, making in all 2,600 cases. The general impression on this market in regard to the position is that much higher prices will rule later on, some going so far as to predict that Karahissar talequale selected will fetch the high figure of 11s. Among more sanguine buyers are the speculators, who continue buying, keeping the stuff here to resell later. At present the position, although firm, is kept down by the small demand from the States, and to the monetary needs of interior dealers, who are buying fresh stock on the producing markets. Should the fall sowings later on fail from want of rain or any other cause, we fully expect to see prices 2s higher, but in any case our market will advance when the American buyers come forward for large supplies, and the position will likely be maintained at least until the end of the year. Successful sowings with a cessation of speculative purchases will bring about a downward tendency, but this cannot take place until early next spring. The arrivals to date are 311 cases, against 1,745 at same period last year; and in Constantinople 71, against 617. The stock in first and second hands is 3,858 cases, against 4,076 even date last year; and in Constantinople 724, against 959."

QUICKSILVER is very weak at 7l. 7s. 6d. per bottle from the importers, and at 7l. 5s. from second hands in quantity.

QUININE.—The feeling is growing that prices have touched bottom, and although there are plenty of buyers at 8½d. for B. and S. and/or Brunswick from second-hand, sellers are firm at 9d. to 9½d. per oz.

SARSAPARILLA.—Mexican is quoted higher from New York at 10c., as the Customs authorities have refused to allow the entry of several parcels.

SCAMMONY-ROOT.—Prices are lower at 15s. per cwt., there having been no demand lately.

SENEGA.—Cables offer new-crop Western root at 2s. 8d. per lb. c.i.f., but there is no inquiry for shipment at the moment. Spot stocks are extremely small.

SHELLAC.—The spot market remains firm with a moderate demand, fair TN Orange selling on a basis of 180s. per cwt.

Sor is slow of sale, good brands being obtainable at from 1s. 3½d. to 1s. 4d. per gal.

SULPHUR.—The exports from Sicily for the twelve months ending June 1905 amount to 462,903 tons, against 505,629 tons in 1904, a decrease of 42,726 tons; and the stocks at the end of June increased to 324,430 tons, against 278,045 tons last year. The exports to the U.S.A. declined by 66,951 tons, but Italy took 27,578 tons more than in 1904. Uncertainty regarding the future still prevails. Sicilian Deputies continue to invoke aid from the Italian Government, and some extraordinary projects are proposed in regard to the future of the industry, such as compulsory association of all mineowners, diminution of production, and the institution of *magazzini generali* under Government supervision. Brimstone of new fusion is beginning to arrive from the mines, and is selling freely on the part of outsiders at rather lower prices. The quantity available, however, is limited, and will soon be exhausted. Meanwhile the Anglo-Sicilian monopoly maintain their quotations.

THYMOL.—The advance among makers appears to be general, another maker having marked up his price by 3d.; 6s. 6d. per lb. is now the nominal quotation, but second-hands would sell at a trifle less.

TRAGACANTH.—Holders are firmer in their ideas of value, and fair sales have lately been made in medium lower descriptions, especially of Persian. Firsts are quoted 13l. to 13l. 10s., seconds 12l. 10s. to 12l. 15s., and thirds 11l. 5s. to 12l. 5s. per cwt.

Heavy Chemicals.

The general demand in the heavy-chemical trade at all the principal centres is a very fair one, and prices are distinctly on the steady side.

ALKALI-PRODUCE.—There is little change in this department, and demand against existing contracts is a full average. Ammonia alkali is very firm, and caustic soda maintains a

steady position with active request. As regards bleaching-powder, the main point of interest is in forward deliveries. Inquiries are more numerous, and makers are holding out for advanced figures.

SULPHATE OF AMMONIA continues dull, and values are only weak in tone. Present nominal figures: Beekton 12l. 10s., Beekton terms 12l. 5s., London 12l. 7s. 6d., Leith 12l. 5s., and Hull 12l. 2s. 6d.

BENZOLS, with continued improved demand, are firmer and dearer: 90 per cent. 9½d. to 9¾d., and 50 per cent. 9d. to 9¼d. per gal. Aniline oil and salts are very quiet, and have hardly maintained their late position, present figures being about 5d. to 4¾d. per lb. respectively.

LEAD COMPOUNDS are in better all-round request, and are maintained at recent figures. White acetate, 24l.; brown, 17l. to 17l. 5s.; nitrate, 24l. to 24l. 10s. per ton, Glasgow, and all less 2½ per cent.

MAGNESIUM SALTS are in average consumptive request. Sulphate (Epsoms), 57s. 6d. to 62s. 6d. per ton; chloride, 65s. to 67s. 6d. per ton; and carbonate, 37s. 6d. to 40s. per cwt.

BICHROMATES OF POTASH AND SODA maintain a steady position, with fair inquiry. Bichromate of potash, English and Scotch deliveries, 3d. per lb., less 2½ per cent., Glasgow, and export 2¾d. per lb., net, f.o.b. Glasgow. Bichromate of soda, English and Scotch deliveries, 2¼d. per lb., less 2½ per cent., Glasgow, and export 2d. per lb., net, f.o.b. Glasgow.

Liverpool Drug-market.

Liverpool, August 9.

Owing to the holidays there is very little business passing.

CASTOR OIL.—In spite of further arrivals, prices continue very firm at 3½d. per lb. to 3¾d. per lb. for good seconds Calcutta, at which there have been considerable sales; for shipment quotation remains unchanged. First-pressure French is in steady demand at 2½d. per lb., and for shipment 23l. 10s. per ton, f.o.b. Marseilles, is quoted, medicinal oil being quoted 26l., f.o.b.

GUM ARABIC.—Further business has been done at advanced prices, and export inquiries tend to strengthen the position.

CANARY-SEED.—A small business has been done in Turkish on private terms, and the little stock offering is held for 75s. per quarter.

TURPENTINE has advanced to 46s. per cwt. for American.

ARSENIC is unchanged at 12l. 10s. per ton net.

NITRATE OF SODA remains steady on the spot at 10s. per cwt. for ordinary to 10s. 6d. for refined.

OLIVE OIL.—Market continues strong in sellers' favour. Seville offers at 36l. 15s. to 38l. per tun, cost and freight according to seller.

POTASHES are quiet at 31s. to 31s. 6d. per cwt. for Montreal pot.

American Drug-market.

New York, July 25.

Business is unusually dull, even for this season of the year, and the drug-market presents few features of interest.

OPUM is quiet but firm, in sympathy with primary markets. Case lots are quoted at \$3.10 per lb.

QUININE is very dull, and makers' quotations are unchanged, 20c. being asked. Second-hands offer at 19½c. for German and 19c. for Java.

MENTHOL has been excited, and quotations have ranged from \$1.90 to \$2.25. The market is somewhat quieter, with \$2.00 a general quotation, though small lots could be had at \$1.95.

PEPPERMINT OIL is neglected, with \$2.60 a nominal figure for bulk oil.

ALOES (CURACAO) remains very firm at 5c. to 5½c.

COD-LIVER OIL is dull. Norwegian is offered on the spot at \$21.00, and Newfoundland at \$20.00.

CASCARA is quiet but firm, with 6½c. asked for 1904 bark.

CITRONELLA OIL is quiet at 35c. for bulk oil.

JAPAN WAX is firmer in sympathy with foreign advices, and 12c. is asked for spot goods.

SARSAPARILLA.—Mexican is firmer owing to the action of the Customs in holding up some inferior shipments. Holders ask 10c. for prompt delivery.

SENEGA is dull and nominal at 62c. for Western.

IPECAC.—Both varieties are firm at \$1.35.

JALAP is quiet but steady at 9c. for new root.

German Drug-market.

Hamburg, August 8.

Business in drugs has somewhat improved this week.

AGAR-AGAR is firm at 260m. per 100 kilos.

ALOES.—Cape is firmer at 58m. per 100 kilos.

CITRIC ACID is strong at 255m. per 100 kilos.

CARNAUBA WAX is quiet; grey is held at 250m. per 100 kilos. up to 410m. per 100 kilos. for fine yellow.

CASCARA SAGRADA is quiet at 63m. per 100 kilos.

CAMPOR.—Refined is quiet, and offering freely at 610m. per 100 kilos. Japanese tablets are offering very cheaply.

ERGOT is tending firmer at 310m. per 100 kilos.

CEVADILLA-SEED is firmer at 80m. per 100 kilos.

IPECACUANHA is unchanged but steady. Rio is 11½m. per kilo., and Cartagena also 11½m. per kilo.

GOLDEN SEAL.—Canadian is easier at 12½m. per kilo.

LYCOPODIUM is very quiet, and prices favour buyers; spot is 625m. to 650m. per 100 kilos., and forward delivery 550m. per 100 kilos.

MENTHOL.—Little doing; spot is quoted 18m. per kilo.

JAPANESE WAX is firm on the spot at 104m. to 105m., and for shipment 102m. per 100 kilos.

SENEGA on the spot is quoted 600m. and forward 590m. per 100 kilos.

STAR-ANISEED firm at 142m. per 100 kilos.

WORMSEED is also firm at 125m. per 100 kilos.

OILS (FIXED).—Castor is firm at 48m. per 100 kilos for first-pressing in barrels. Cod-liver oil is strong at 80m. per barrel for non-congealing oil. Chinese wood oil on the spot is very scarce at 64m., and August shipment 56m. per 100 kilos. Palm-kernel oil is firm at 52½m. per 100 kilos.

OILS (ESSENTIAL).—Peppermint-oil is quiet. Japanese on the spot is quoted 9½m. per kilo., and American H.G.H. spot 13½m., near delivery 12½m. per lb. Star-aniseed oil is quoted 10½m. per kilo.

London Drug Statistics.

The following statistics are compiled from information supplied by public warehouses. They relate to the receipts and deliveries of some of the leading drugs from and into the London public warehouses for the month of July, 1905, and to the stocks on July 31:

	July		Stocks		1905	
	Landed	Delivd	1905	1904	Imprtd.	Delivd.
Aloes.....cs, etc.	238	126	566	£22	770	990
Aniseed, star cs	—	—	—	31	11,266	10,161
Arrowroot pkgs	1,657	710	12,130	12,375	113	311
Balsams ... cks, etc.	—	90	474	653	113	311
Calumba bgs	6	33	34	349	88	343
Campbor.....pkgs	—	132	1,275	1,207	4,564	4,586
Cardamoms cs, etc.	323	440	2,228	3,234	3,206	3,385
Cinchona.....pkgs	2,196	1,277	7,963	7,033	9,971	8,177
Cocculus indicus bgs	—	42	35	103	—	58
C. chinensis "	118	58	222	252	415	384
Cubebs "	10	108	487	1,140	21	264
Dragon's-blood.....cs	61	20	106	51	191	122
Galls.....pkgs	135	270	1,701	1,614	1,922	1,141
Gums—						
Ammoniacum ..	—	—	5	14	3	2
Animi "	90	79	257	£24	397	617
Arabic "	810	751	5,722	7,834	5,567	7,734
Asafetida..... "	—	40	286	289	734	730
Benzoin "	89	159	697	1,202	995	1,145
Copal..... "	4,627	5,700	20,543	24,173	40,028	38,207
Damar "	408	578	2,053	1,617	3,004	3,175
Galbanum ... "	—	—	—	3	—	3
Gamboge "	44	20	63	6	171	126
Guaiaacum ... "	8	7	60	51	51	52
Kauri ... tons net	154	138	904	1,224	1,153	1,108
Kino.....pkgs	2	2	76	124	4	14
Mastic "	—	—	—	24	—	21
Myrrh, E.I. "	36	42	95	89	184	127
Olibanum ... "	149	225	2,271	3,699	1,511	1,272
Sandarac "	47	111	193	1,058	572	1,311
Tragacanth... "	678	1,273	7,225	4,571	13,520	10,309
Ipecacuanha—						
Matto Grosso ..	20	37	180	314	138	263
Minas "	—	4	25	67	6	68
Cartagena ... "	3	—	17	64	4	19
E. I. "	6	21	5	8	119	162
Jalap.....bls	36	94	151	245	96	184
Nux vomica pkgs	9	19	1,575	687	2,267	753
Oils—						
*Aniseed, star ...cs	—	31	195	334	20	112
*Cassia..... "	—	7	127	95	180	136
Castor pkgs	117	116	242	776	915	952
Cocoa-nut tons	87	49	318	120	633	501
Olive.....cks, etc.	189	262	608	986	1,550	1,483
Palm tons	—	1	6	6	6	9
*Quinine.....lbs	—	3,800	188,652	212,592	6,881	26,740
Rhubarb chts	82	54	188	170	327	388
Sarsaparilla bls	90	58	129	212	424	455
Senna.....pkgs	534	203	2,688	1,502	2,814	3,101
Shellac.....cs	3,053	6,494	22,394	24,846	23,622	44,313
Sticklac "	112	194	279	219	601	703
Turmeric..... tons	152	38	435	387	287	225
Wax, bees' pkgs	763	475	1,744	1,460	3,934	3,872
" Japan..... "	—	75	58	610	406	615

* Stocks of essential oils at Smith's Wharf, Red and Bull Wharf, Brewer's Quay are not included.

† Includes quantity at Red Lion, Bull, and Smith's Wharves; also at the Docks.

ASSISTANT (25), unqualified. 8 years' experience (London included). Photography, Extractor, wishes situation in London; disengaged; interview Monday or later. "M., 25 Richmond Gardens, W.

UNQUALIFIED: 27; tall; married; thorough experience, Dispensing, Prescribing, Photography; excellent references; permanency required. "St. tim," 8 Osborne Road, Weston-super-Mare.

30: unqualified; disengaged; London Store references; Locum, permanency, or view to early succession; London or North of England preferred. "Extractor," 23 Durham Road, Plumstead, S.E.

BRANCH Manager: married, no family; age 42; 5 ft. 7 in.; Photographer, Extractor; steady; smart; best training and experience; personal references. "P., 14 Richmond Avenue, Polytechnic Estate, Wembleton.

ASSISTANT (Germans), 25, tall, abstainer, 2 years as Second Dispenser and Laboratory Assistant in leading English South Coast Pharmacy, good references, seeks situation as Junior Dispenser. G. Voss, 2 Johannistrasse, Stettin, Germany.

ADVERTISER (Minor qualification) requires a situation where a knowledge of Extracting, &c., may be obtained; first class experience in all branches of the Retail business; excellent references; Manchester or Liverpool preferred. 101/39, Office of this Paper.

APOTHECARIES' Assistant (qualified) seeks engagement, Chemist, Institution, Doctor; Dispenser, Prescriber, Extractor, Light Surgical, Veterinary; grind assistants for Hall; testotaller; 23; excellent testimonials; salary 28s. week (outdoors). 105/38, Office of this Paper.

QUALIFIED Chemist desires position as Manager, with view to succession or partnership in good business; 16 years' experience in good business, both Wholesale and Retail; married; able to introduce business and to command capital. Replies, in confidence, to "Piperazin," 106/7, Office of this Paper.

WHOLESALE.

EXPERIENCED Drug Traveller desires re-engagement with good firm. 91/21, Office of this Paper.

TRAVELLER desires re-engagement, London, South Coast, or West of England. 104/11, Office of this Paper.

TRAVELLER, representing Wholesale Druggists in London, desires to make a change. 109/19, Office of this Paper.

WHOLESALE, or any position of trust; married; aged 30. Please give full particulars, 107/32, Office of this Paper.

TRAVELLER wants commission for Sundries; big connection London, South Wales, and West of England. 108/30, Office of this Paper.

POSITION as Representative or position of trust; thorough knowledge of trade in all branches; £50 offered as bonus. 105/25, Office of this Paper.

CORRESPONDENT desires to represent good firm; Drugs, Sundries, or Photographic; tall; young; references. "Lakes" (108/2), Office of this Paper.

EXPERIENCED Traveller, with 11 years' connection amongst Chemists in the kingdom, seeks re-engagement. "Reliable" (110/15), Office of this Paper.

SURGICAL Instrument and Chemist Sundries Traveller (young) wishes appointment with Wholesale firm; good connection England, Scotland. Hatrick, 22 Spencer Road, Chiswick.

REPRESENTATIVE, with good connection among Doctors and Chemists in Scotland, desires to represent good firm; first-class references. "Traveller" (105/22), Office of this Paper.

TOWN Traveller with connection; good appearance; energetic; young (27); or as Manager of department; good organiser; best references and experience. "Permanency" (106/30), Office of this Paper.

REPRESENTATIVE (33), late Armour & Co. (Ltd.), toilet soap makers, excellent connection, 6 Northern counties (Chemists and Grocers), seeks engagement good firm. F. Mitchenson, 25 York Street, Newcastle.

YOUNG Chemist seeks position as representative with good wholesale house; tall; energetic; ambitious; excellent references; aged 25; thorough knowledge of Drugs and Sundries; no objection to indoor work for a time. 107/34, Office of this Paper.

ADVERTISER (29), compelled to relinquish lucrative position in South Africa for family reasons, desires Home employment as Traveller or Manager of South African Department for good Wholesale firm; thoroughly experienced wholesale and retail; late wholesale manager; arriving London end of year; first-class references. Write, in first instance, to present employer—home on holiday—"Johannesburg" (66/30), Office of this Paper.

MISCELLANEOUS.

Special charges are made for Advertisements under this heading, which can be obtained on application.

Replies to Advertisements may be addressed to this Office and forwarded to the Advertiser for an additional charge of od. Trade circulars and samples can in no case be forwarded.

SPECIAL OFFER TO CHEMISTS.—Our new book of Original Designs and Ideas for Advertisers, entitled "The Ad. Illustrated," contains over 100 smart designs, with appropriate wordings; brimful of suggestions for Newspaper and General Advertisements; published at 6d.; as a special offer, we will send copy to the first 100 applicants for 3 stamps. B. Whitworth Bird (Lim.), Advertising Specialists, Norwich.

WELL-KNOWN firm, with good old-established connection amongst Wholesale Buyers, Shippers, &c., desires to Represent Firm for the London Export; nice showroom; arrangements can also be made for South African Representation if desired. Address, "R. H.," 83, c/o Messrs. Deacon's, Leadenhall Street, London, E.C.

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All post free throughout the world. Prices net, cash with order.

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PATENT CHINAWAY SYPHONS combine important hygienic and mechanical features; extremely simple construction; very strong; stringent acid tests have demonstrated that metallic contact of the contents is absolutely impossible. Chemists filling their own siphons should write for sample and full particulars to sole manufacturers, Idris & Co. (Limited), Syphon Manufacturers, 35/43 King's Road, St. Pancras, N.W.

McADAM & TUCKNISS, Sharedealers, 30 Tranquil Vale, Blackheath, London, S.E. Telephones 81 and 81a Lee Green.

SHARES FOR SALE (free of commission, subject).—102 Camwal ordinary, 6s. 3d.; 10 Southall Bros. & Barclay preference, 22s.; 100 Geo. Coverdale ordinary, 16s. 3d.; 120 G. B. Kent & Sons 5½ per cent. preference, 19s. 9d.; 200 Idris "A" preference, 22s. 4½d.; 4 Harrison Barber, £3 7s. 9d.; 100 Ilford ordinary, 16s. 10½d.

WANTED (subject).—100 Camwal preference, 12s.; 50 Lewis & Burrows ordinary, 4s.; 50 preference, 12s.; 250 Idris "A" ordinary, 27s.; 20 Evans Lescher preference, £5 6s.

List of shares for sale and wanted sent free on application. Bankers, London and County. Established 1898.

CHEMIST'S Fittings.—10 ft. range of mahogany drug drawers with glass doors and knobs and lockers under; 10 ft. mahogany-top serving counter; 6 ft. dispensing screen with counter under; desk and perfume case; bent-glass counter case and French scales; £25 the lot.

PHILIP JOSEPHS & SON, 93 Old Street, London, E.C.

IMPORTANT NOTICE TO CHEMISTS about opening new Premises.—We have positively the largest and finest Stock of Second-hand Fittings for sale at Unheard-of Prices; drawings and full particulars on application; inspection invited; shops fitted completely. Kuddock & Co., Shop-fitters, 262 Old Street, London.

GREAT Bargains in Second-hand Fittings.—The fittings of a shop 14 ft. by 12 ft., £30; 1 nest of 15 counter-drawers, 35s.; 1 ditto of 8 ditto, 17s. 6d.; 144 stoppered rounds, assorted sizes and gold-labelled, £5 17s. 6d.; 108 recessed-label ditto, £8; 6 ft. counter with glass-case front, £4; 8 ft. ditto with panelled front, 65s.; 4 ft. wall case, £5 10s.; 3 ft. bent-front glass counter-case, 50s.; 6 ft. mirror-centre dispensing-screen, £5 10s.; 2 ft. perfume-case and desk, 50s.; 4 ft. nest of counter-drawers, 42s.; 12 ft. range of pine drug-drawers, gold-labelled, £6; 12 ft. ditto mahogany, with bevelled-glass labels, £8 10s.; 1 nearly new pill-machine to cut 36 pills, 20s.; 1 ditto to cut 12 pills, 10s.; 1 set of 1 each No. 2, 6, and 12 compo. mortars and pestles, 17s. **R. TOMLINSON & SONS**, Headquarters for Second-hand Fittings, Bond Street, Birmingham.

PURE Oil of Lemon, original 25-lb. coppers, 1s. 7½d. lb.; Vanillin, 1s. 6d. oz., 20s. lb.; Heliotropin, 7s. 6d. lb.; Artificial Musk, 100 per cent., 2s. 6d. per oz.; Finest Oil of Neroli, 7s. oz.; Special Concentrated Violet Perfume (1 to 20), 4s. per oz.; Finest Vanilla Essence, 3s. 6d. per lb., 4s. sample pound post free; net cash with order. H. Marshall & Co., Essential Oil Importers, 39 Warwick Lane, E.C.

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Objections to the registration of any of the undermentioned applications should be lodged with C. N. Dalton, Esq., C.B., Comptroller-General of Patents, Designs, and Trade-marks, at the Patents Office, 25 Southampton Buildings, Chancery Lane, London, W.C., within one month of the dates mentioned. The objection must be stated on Trade-marks Form J, cost £1, obtainable through any money-order office.

(From the "Trade-marks Journal," July 12, 1905.)

- "WEEDOL" ("Weed" disclaimed); for a weed-killer. By Morris Little & Son, Ltd., 13 Priory Place, Doncaster. 273,012.
- "BROOMASSITE"; for a skin-preparation. By Burgoyne, Burdidges & Co., 12 Coleman Street, London, E.C. 273,040.
- Device of John Bull; for pills. By L. G. Reynolds, 8a Chancel Street, London, S.E. 270,833.
- "SURRETS" and label device; for a sugar-coated pill. By the Aba Manufacturing Co., 9 George Street, Market Rasen, Lincs. 271,251.
- "J. WILKINS" (signature); for an ointment. By J. Wilkins, 67 Lower Road, Rotherhithe, London, S.E. 273,292.
- "LOOFITE"; for a medicated sock. By Morton & Morton, 159 Rye Lane, Peckham, London, S.E. 273,025.
- "REGNAS"; for surgical instruments. By J. Sanger & Sons, 2 Winsley Street, London, W. 273,256.
- "FILBRITE"; for a filtering material. By Bratby & Hinchliffe, Ltd., Sandford Street, Ancoats, Manchester. 273,036.
- "JUITSU"; for mineral and aerated waters. By Robinson & Speight, 15 Blackfriargate, Hull. 272,948.
- Device of a hand and tablet of soap labelled "MIDLAND CLEANSER"; for soap. By Gerard Bros., Ltd., New Bedford, Nottingham. 271,452.
- "FOAMO" ("Foam" disclaimed); for soap. By R. S. Hudson, Bank Hall, Liverpool. 273,119.
- "DAINTLETS," "DROSERA" and "SUN DEW"; for candles, soap, detergents, etc. By the Vinolia Co., Malden Crescent, London, N.W. 273,182, 273,327, 273,338.
- "RACERINE" ("Race" disclaimed); for candles, soap, etc. By S. Bowley & Son, Battersea Bridge, London, S.W. 273,290.
- "SAMONA"; for a hair-tonic and other toilet-preparations. By B. W. Hird, Oriental Chambers, London Street, Norwich. 272,114.
- "CAMELIS"; for a perfume. By the Parfumerie Delettrez, 15 Rue Royale, Paris. 272,936.

(Applications from the "Trade-marks Journal," July 19, 1905, were published in the Supplement of July 29.)

(From the "Trade-marks Journal," July 26, 1905.)

- "AIR SHIP" and device of an airship; for chemicals. By Hird, Hastie & Co., 73 Park Street, Kinning Park, Glasgow. 273,164.
- "APPRETOL" ("Appret" disclaimed); for chemicals. By O. Kutzner, 22 Alexander Strasse, Berlin. 273,606.
- "CYANANTHRENE"; for chemicals and raw materials. By the Badische Anilin & Soda Fabrik, Friesenheimerstrasse, Ludwigshafen-on-Rhine. 273,878, 273,879.
- "WANTILL"; for a mole poison. By L. Ough & Son, Market Street, Liskeard, Cornwall. 271,139.
- "GYP"; for a soap used as an insecticide. By E. Cook & Co., Ltd., Bow, London, E. 271,185.
- "ANTIDIN" ("Anti" disclaimed); for insecticides. By H. Bensmann, Lagenstrasse 12, Bremen. 273,170.
- "PURIFOL" ("Pure" disclaimed); for an oily vaporising fluid. By H. Brown, Moorcote, Eversley, Hants. 265,787.
- "KARTINE"; for a patent medicine. By W. Willis, Broad Street, Alresford, Hants. 273,046.
- "PERSKINO"; for chemicals. By J. H. Shuttleworth, 36 Canwick Road, Lincoln. 273,254.
- "REGNAS"; for chemicals. By J. Sanger & Sons, 2 Winsley Street, London, W. 273,255.
- "HEATHER BREW"; for mineral and aerated waters. By J. A. Reid, Lily Spring Works, Helensburgh, Dumbartonshire. 273,432.
- "COOLO" ("Cool" disclaimed); for aerated waters. By Forster, Coverdale & Co., Ltd., Hull Road, York. 273,450.
- "VINOLIA," "PERSONIA," and "SWEET HOPE"; for candles, soap, detergents, etc. By the Vinolia Co., Ltd., Malden Crescent, London, N.W. 269,881, 273,190, 273,192.
- "HERMINE"; for soap, detergents, etc. By F. Hermann, 34 Wellesley Road, Croydon. 272,289.

"VELVIX"; for perfumery. By J. Sanger & Sons, 2 Winsley Street, London, W. 272,605.

(From the "Trade-marks Journal," August 2, 1905.)

- "MOA"; for chemicals. By Jenson & Nicholson, Coswell Works, Wharton Road, Stratford. 269,523.
- "NIGRATINE" ("Nigra" disclaimed); for chemicals. By H. O. Brandt, 66 Sackville Street, Manchester. 273,295.
- "ROLLINE"; for chemicals. By Rolls & Linoms, Ltd., 334 St. James's Road, London, S.E. 273,737.
- "KEM-KA"; for chemicals. By Borge & Co., Castle Lane, Church Street, Liskeard. 273,940.
- "CARBOCIDE" ("Carbo" disclaimed); for a liquid disinfectant. By Philadelphus Jeyes & Co., Ltd., 6 Drapery, Northampton. 273,380.
- Device of a child seated on a sheep; for veterinary medicines. By J. R. Kirkham, Cadeby Avenue, N. Tboresby, S.O., Lincolnshire. 273,317.
- "GERMOL" ("Germ" disclaimed); for disinfectants. By Read, Holliday & Sons, Ltd., 11 Cambridge Buildings, Upperhead Row, Huddersfield. 273,769.
- "CAPSOLIN"; for a medicated preparation for external use. By Parke, Davis & Co., 111 Queen Victoria Street, London, E.C. 272,512.
- "CEROLIA"; for a skin cream. By H. H. Long, 48 Dorset Street, London, W. 273,058.
- "DIGESS"; for a medicine. By H. Baker, 120 Theobald's Road, London, W.C. 273,091.
- "NEPHRINALIN" ("Nephri" disclaimed); for a medicine. By H. W. K. Pears, Goldstone Chemical Works, Hove, Sussex. 273,296.
- "UROBAN"; for a rheumatism, gout, and lumbago medicine. By C. Paine, Market Place, Westbury, Wiltshire. 273,494.
- "PASTOID" ("Paste" disclaimed); for chemicals and dental preparations. By O. W. F. Hill, 58 Berners Street, London, W. 273,688, 273,689.
- "VITOGEN"; for medicines. By A. Oldcorn, 1 Piccadilly, London, W. 273,910.
- "THE CHAMELEON"; for optical goods. By Lawrence & Mayo, 67 Chancery Lane, London, W.C. 273,415.
- "POCO"; for photographic apparatus. By Kodak, Ltd., 57 Clerkenwell Road, London, E.C. 272,792.
- Label device of a woman bandaging a man's hand; for first-aid goods. By Franklin's Emergency Case Co., 62 Dale Street, Liverpool. 272,459.
- "MAXILS"; for food substances exclusive of cattle meals. By Alfred Bishop, Ltd., 48 Spelman Street, London, N.E. 272,271.
- "TARTARACAS" ("Tartar" disclaimed); for an article of food. By the Manchester Chemical Co., 4 Bradsbaw Street, Shudehill, Manchester. 273,059.
- Label device, with photo of W. George; for "Simpulclean" cloth-cleaner. By W. George, Elstone House, Bicester, Oxon. 265,814.
- "RECREATION"; for candles, soap, detergents, etc. By the Vinolia Co., Malden Crescent, London, N.W. 273,618.
- "AU TEMPLE DE FLORE" and label devices; for eau de Cologne. By A. & M. Landon and Jean Vincent Bully, 67 Rue Montorgueil, Paris. 265,083.
- "KON-OWN"; for perfumery. By Ada F. Barford, Clydesdale, Hershaw Road, Walton-on-Thames. 268,790.
- "VELDERM" and floral label device; for a toilet-preparation. By Neve & Co., 28 Norman Road, St. Leonards-on-Sea. 272,461.
- "ESTO"; for perfumery. By K. A. Lingner, Nossenstrasse 2, Dresden, and 26 Southwark Bridge Road, London, S.E. 272,672.
- "VEL-VEL"; for perfumery. By Breidenbach & Co., 48 Greek Street, London, W. 273,305.
- "WYVERN"; for tooth-brushes. By J. G. Warren, 112 Brighton Road, Croydon. 272,261.
- "VEGA"; for a metal-polish. By E. W. Lucas, 225 Oxford Street, London, W. 272,427.

AMONG the exports from Maranham during 1903 were 18 tons of balsam copaiba (1902, 10 tons), 85 tons of carnauba wax (1902, 33 tons), and 178 tons medicinal herbs (1902, 246 tons).

AGAR-AGAR AS A WINE-CLARIFIER.—In a case coming up on appeal, the Supreme Court of the German Empire has decided that the use of agar-agar dissolved in tartaric-acid solution to clarify wine is not permissible, and is subject to penalty. Wine thus treated is to be considered adulterated on account of the acid added.

"Pharmaceutical Formulas."

A NEW and much enlarged edition of this popular book is now ready. There have been five editions up to now, the first having been published on March 29, 1893. Previous editions contained 672 pages, but the one which has just appeared extends to 887 pages. The new edition embodies three years' accumulation of notes and formulas, and includes three new chapters, one of them devoted to agricultural and horticultural preparations, another to photographic chemicals and solutions, and a third to bacteriological and microscopic reagents. There is also considerable rearrangement, which has been done in order to facilitate reference. In revising the work the fact has been kept constantly in view that its appreciative acceptance in all parts of the globe is primarily due to explanatory notes and information in connection with the formulas which are not usually found in formularies. By occasional references to patent literature, as well as additions to the notes, it is hoped that those who are willing to work out processes will have material assistance from the volume. Altogether about 2,000 new formulæ have been added, and some idea of the enlargement of each section is given by the following contrast :

Section	Previous Edition Pages	New Edition Pages
Toilet preparations and specialities ...	60	68
Preparations for the hair ...	53	65
Dental preparations ...	37	44
Perfumes ...	57	68
Beverages ...	58	63
Culinary and household requisites ...	90	185
Horticultural and agricultural preparations	—	34
Writing materials ...	33	37
Varnishes, polishes and stains ...	22	22
Lozenges ...	11	14
Miscellaneous preparations ...	27	27
Photographic chemicals and preparations ...	—	22
Galenic and medicinal preparations ...	197	273
Bacteriological and microscopic preparations	—	8

The price of the new edition is 10s. net, or by post 10s. 6d. It will be obtainable from any of the following houses at the published price in Great Britain :

Ayrton, Saunders & Kemp, Ltd., Liverpool.
 Barclay & Sons, Ltd., London.
 Bleasdale, Ltd., York.
 Burgoyne, Burbidges & Co., London.
 Edwards, W., & Son, London.
 Evans Sons Lescher & Webb, Ltd., London and Liverpool.
 Faulding, F. H., & Co., Adelaide.
 Felton, Grimwade & Co., Melbourne.
 Glasgow Apothecaries' Co., Glasgow.
 Goodall, Backhouse & Co., Leeds.
 Gower, J., Waterloo, Liverpool.
 Harkness, Beaumont & Co., Edinburgh.
 Hirst, Brooke & Hirst, Ltd., Leeds.
 Ismay, John, & Sons, Newcastle-on-Tyne.
 Kempthorne, Prosser & Co., Auckland, N.Z.
 Lennon, Ltd., London and Cape Town.
 Lewis, H. K., 136 Gower Street, London.
 Lynch & Co., Ltd., London.
 Maw, S., Son & Sons, London.
 May, Roberts & Co., London.
 Newbery, F., & Sons, Ltd., London.
 Pinkerton, Gibson & Co., Edinburgh.
 Potter & Clarke, London.
 Raimes, Clark & Co., Edinburgh.
 Raimes & Co., York.
 Sanger, J., & Sons, London.
 Sharland & Co., Auckland, N.Z.
 Simpkin, Marshall & Co., London.
 Southall Bros. & Barclay, Ltd., Birmingham.
 Sutton & Co., London.
 Thompson, John, Ltd., Liverpool.
 Woolley, Sons & Co., Ltd., Manchester.
 Wilkinson & Simpson, Newcastle-on-Tyne.

Messrs. McKesson & Robbins, New York, will also hold stock of the book and supply it duty-paid; so will the *Chemist and Druggist of Australasia*, Fink's Buildings, Melbourne.

THE exports of star-aniseed from Wuchow during 1904 were 11,149 cwt. (14,827.), against 10,081 cwt. (17,934.) during 1903.

Where to Study.

THIS week's issue of THE CHEMIST AND DRUGGIST is devoted mainly to students. Full particulars are given of all the methods, varieties, fees, and courses of study throughout the country for those desirous of entering on a scientific career. The following educational institutions have special advertisements in this issue :

School of Pharmacy, 17 Bloomsbury Square, W.C.
 Muter's School of Pharmacy, 325 Kennington Road, S.E.
 Westminster College of Chemistry, Trinity Square, Borough, S.E.
 Metropolitan College of Pharmacy, 160 and 162 Kennington Park Road, S.E.
 London College of Chemistry, 323 Clapham Road, S.W.
 Imperial College of Chemistry and Pharmacy, Imperial Buildings, Ludgate Circus, E.C.
 Central School of Pharmacy, Charterhouse Street, E.C.
 Fairchild Scholarship and Prizes, Bath House, Holborn Viaduct, E.C.
 Brixton School of Pharmacy, Brixton Road, S.E.
 Liverpool School of Pharmacy, 6 Sandon Terrace, Liverpool.
 Leeds College of Pharmacy, Clarendon Road, Leeds.
 Northern College of Pharmacy, 100-102 Burlington Street, Manchester.
 Royal Dispensary, 21 West Richmond Street, Edinburgh.
 Edinburgh Central School of Pharmacy, Clyde Street, Edinburgh.
 Glasgow School of Pharmacy, 180 West Regent Street, Glasgow.
 West of Scotland School of Pharmacy, 157 St. Vincent Street, Glasgow.
 Institute of Chemistry, Bloomsbury Square, W.C.
 College of Preceptors, Bloomsbury Square, W.C.
 City of London College, White Street, Moorfields, E.C.
 Royal Albert Memorial School, Exeter.
 Spectacle-makers' Company, 11 Temple House, Temple Avenue, E.C.
 Middlesex Hospital Medical School, Cleveland Street, W.
 National Dental Hospital, Great Portland Street, London, W.
 Goldsmiths' Institute, New Cross, London, S.E.
 Royal (Dick) Veterinary College, Edinburgh.
 Charing Cross Hospital Medical School, Charing Cross, London, W.C.
 Royal Dental Hospital of London, Leicester Square, W.C.
 Queen's College, Cork. University of Birmingham.
 University of Liverpool. University of St. Andrews.
 University of Durham. University College, Dundee.
 University of Edinburgh. Victoria University, Manchester.
 University College, Bristol.

New Books.

These notes do not necessarily exclude subsequent reviews of the works. Any of these books printed in Great Britain can be supplied, at the published price, to readers of this journal on application (with remittance) to the Publisher of "The Chemist and Druggist," 42 Cannon Street, London, E.C.

Smith, F. *Manual of Veterinary Hygiene.* 8 $\frac{3}{4}$ × 5 $\frac{1}{2}$. Pp. 1056. 15s. net. (Baillière.)

Strawson, G. F. *Insects and Fungi Injurious to Plants: Remedial Treatment.* Part II. Illus. 9 × 5 $\frac{1}{2}$. Pp. 214. 3s. 6d. net. (Spottiswoode.)

Theulier, M. E., and Rodie, M. J. *Essays on Certain Processes and Products of Perfumery.* 5 $\frac{1}{2}$ × 8 $\frac{1}{2}$. Pp. 130. (Lautier Fils, Grasse.) [This is a collection of essays on essential oils and perfumery processes by the chief chemists in the well-known French firm of Lautier Fils. It commences with an interesting illustrated account of the various processes for the extraction of perfumes from flowers. Then follow original and summarising articles on citrapene, and the essences of lavender, citron, orange, mandarin, bergamot, orange flowers and sweet-orange flowers or Portugal neroli, rosewood, vetiver, vervain, and patchouli.]

Walters, F. R. *Sanatoria for Consumptives: Critical and Detailed Description, with Exposition of the Open-air or Hygienic Treatment of Phthisis.* 10 × 6 $\frac{3}{4}$. Pp. 406. 12s. 6d. net. (Sonnenschein.)

Watson, J. R. *Natural Science in Hygiene; or, Life-history of the Non-bacterial Parasites Affecting Man.* For Students of Public Health. 12mo. Pp. 62. 1s. 6d. net. (Simpkin.)

Exchange Column—Bargains.

TERMS.

One halfpenny per word with name and address. One penny per word if we register the address and attach a number.

No Advertisement inserted for less than 6d.

Limited to the Advertisements of Surplus Stock, not of a Wholesale Character, of Shop Fittings (secondhand), Apparatus, Photographic Goods, Books and Periodicals, Formulae, Addresses Wanted, and Articles Wanted.

DEPOSIT.—The purchaser of anything advertised in the Exchange Column may remit the amount to us, and we only pay the money deposited on advice from the remitter. We charge a commission of 6d. on any transaction of £3 or less, and 1s. if above that amount, which is payable by the purchaser.

Remittances payable to EDWARD HALSE, and crossed MARTIN'S BANK, LIMITED.

FOR DISPOSAL.

APPARATUS.

Water-still.—One Morris & Wethered's No. 23 automatic still for sale, fitted for gas, complete, with connections. Price and particulars from GILBERT BOYS, Ironmonger, Worthing.

BOOKS AND PERIODICALS.

"C. & D.," bound in volumes, from 1892, complete; what offers? SHARMAN, Northwood.

Offered, "Pharmaceutical Journal," 41 to 84 (79 missing), "Chemist and Druggist," 71 to 84, bound half calf; no reasonable offer refused. S. W. ORD, 3 Hanover Street, W.

DRUGS AND CHEMICALS.

Best offers for 6 oz. pulv. scam. virg., 7 lbs. pulv. cambog., 2 lbs. rad. ipecac., 3 lbs. cort. aurant. ang., 40 lbs. plumbi nitrat., 7 lbs. rass. santal. rub., 3 lbs. cort. cuspariæ. 124 Market Street, Manchester.

OPTICAL AND PHOTOGRAPHIC.

Kodak daylight developing-machine, in case, style A, unused; accept first reasonable offer. JONES, Chemist, St. Asaph.

Camera.—Kodak, No. 2 Bullet; cost 75s.; scarcely soiled; want 40s., or offer. CASSELL, 261 High Street, Plumstead.

No. 4 Bull's Eye Kodak, focussing; good condition, with strong leather carrying-case; what offers? HIND, Station Street, Kibworth.

Spectacles and folders, 14 doz. assorted, perfect condition, never been shown, cost over £14, accept £10; also what offers for 3 whirling sprays, 1 doz. Mennen's borated talcum. 109/10, Office of this Paper.

Portable photographic developing tent, box form, Rouché's pattern with tripod stand, for plates up to 10 by 8, can be used indoors or outside; bargain, 12s., cash with order; half-plate printing frames 4s. dozen. HIGGINS, Stevenage.

PROPRIETARY ARTICLES.

Hayward's yellow paste dip, 7 5s. tins, 29 1s. packets; 38s. the lot or retail. PATTRICK, Chemist, Consett.

SHARES.

Shares for Sale.—See p. 81.

SHOP FITTINGS.

Three medium-sized pear-shaped show carboys; any price. POLLEY, Chemist, Ayr.

Cases, front of counter, 3 lengths, 8' 10", 8' 5", 4', mahogany; complete, with glass shelving, cut-glass amber knobs on doors; price for lot £5 5s. HULME & Co., LTD., Chemists, Oldham.

MISCELLANEOUS.

Check-till, Gledhill's; nearly new; 35s. TOOTHILL, Chemist, Altrincham.

Vulcaniser for sale; good condition; price 30s. Apply, 102/30, Office of this Paper.

Dental-engine, 55s.; show-case, 40s.; tools, 18s. "DENTIST," 4 Southwark Bridge Road, London.

Maw's reversible pill-machine, 3 and 5 grain, perfect; cost 32s., accept 18s. CULLEN, Chemist, Norwich.

Printing-press, metal type, accessories, 10s.; prints cards, memos, billheads, circulars, labels, picture-postcards, &c. Particulars from WEBSTER, Leonard Street, Derby.

Send 1d. stamp for sample of an exquisite bouquet, which could be called by any fancy name and put up as own speciality; price 5s. 6d. per pint. WILSON, Chemist, Stockport.

Best Offer.—2½ oz. cocain. hydrochlor., ½ oz. atropinæ sulph., guaranteed B.P.; also chemical balance, suitable for student, with metric weights in glass case, complete, by Beck, 30s. "F. W. D.," Erdington Hall, Gravelly Hill, Birmingham.

Thirty 2s., 18 2s. 6d. Chapman's cattle oils, clean, £2; 42 6d., 36 2d. Hall's glossy starch, shop-soiled, quarter-price; quarter-plate Lancaster's instantograph, dark slide, slightly damaged, tripod, &c., all complete, shop soiled, £1; sparklet syphon, old style, never used, 1s. 6d.; all carriage paid. ABBOTT, Westgate, Shipley.

WANTED.

Three-grain pill-machine. BLACKLOCK, Crawley, Sussex.

Half or whole plate field-camera, by standard maker. HORTON, Woburn Sands.

Old artificial teeth bought; cash by return post. DENT, 3 Hinchley Road, Leicester.

Two bull's-eyes for outside lamp; state size and colour. "B.," Binfield House, Olapham, S.W.

A mixer for powders with five screens; Gardner or other make. J. W. BAKER & Co., York Street, Bristol.

Minor books, Chemists' books, modern editions; cash value on receipt. GOWER, Bookseller, Waterloo, Liverpool.

Chemical balance; secondhand; short beam; good condition. State price, GILMOUR, 312 Outbarn Road, Glasgow.

"Chemist and Druggist," unbound, for the year 1874, in good condition. "Kansas" (257/13), Office of this Paper.

"Catalogue of the Materia Medica Museum" of the Pharmaceutical Society; 2 copies wanted. State price to 33/68, Office of this Paper.

For speciality, a first-class perfume; must be refreshing, delicate, lasting; not common synthetic type; perfume or formula purchased. 104/20, Office of this Paper.



